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Congressional Committee Opens Paper Bids

Thirty-Two Concerns, As Compared With Thirty-Six In November, Submit Bids For Supplying Government Printing Office With Paper For Six Months Beginning July 1 — Prices Are Lower Than At Last Opening.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 15, 1939—Bids were received today by the Joint Congressional Committee on Printing from thirty-two bidders for paper for the use of the Government Printing Office for the six months period beginning July 1. At the last opening in November bids were received from thirty-six bidders.

Officials pointed out that the bids received today on many items were generally lower than those at the last opening and this applied especially to machine finish book paper.

The Joint Committee will meet on May 22 to consider making awards.

The bids received today were as follows:

Newsprint

No. 1—600,000 lbs., 24x36—64; rolls, 24, 36, and 48 ins. wide (3-inch fiber cores, weight of cores and wrappers shall be included in net weight.)

National Pulp & Paper Co.	2.425c
Barton, Duer & Koch Paper Co.	2.96c
Marquette Paper Co.	2.596c
Paper Corp. of U. S.	2.946c
Old Dominion Paper Co.	2.9927c

Machine-Finish Book

No. 3—400,000 lbs., 25x38—70; flat, cut 24x32, 28x38, and 31¼x45½ ins.

John F. Post, Inc.	5.65c
Perkins-Goodwin Co.	4.63c
Whitaker Paper Co.	4.57c
Fitchburg Paper Co.	4.79c
Stanford Paper Co.	4.89c
Frank Parsons Paper Co.	4.576c
Barton, Duer & Koch Paper Co.	4.62c
Marquette Paper Co.	5.03c
Graham Paper Co.	5.51c

No. 4—400,000 lbs., 25x38—70; flat, cut 24x38 and 38x48 ins.

John F. Post, Inc.	5.65c
Perkins-Goodwin Co.	4.63c
Whitaker Paper Co.	4.57c
Fitchburg Paper Co.	4.79c
Stanford Paper Co.	4.89c
Frank Parsons Paper Co.	4.576c
Barton, Duer & Koch Paper Co.	4.65c
Marquette Paper Co.	5.03c
Graham Paper Co.	5.51c

No. 5—500,000 lbs., 25x38—70; flat, cut 24x38 and 38x48 ins.

John F. Post, Inc.	5.65c
Perkins-Goodwin Co.	4.63c
Whitaker Paper Co.	4.56c
Fitchburg Paper Co.	4.79c
Stanford Paper Co.	4.89c
Frank Parsons Paper Co.	4.565c
Barton, Duer & Koch Paper Co.	4.59c
Marquette Paper Co.	5.03c
Graham Paper Co.	5.51c

No. 6—350,000 lbs., 25x38—70; rolls, 18, 21, and 28½ ins. wide (3-inch fiber cores).

John F. Post, Inc.	5.27c
Perkins-Goodwin Co.	4.24c
Mudge Paper Co.	3.984c
Whitaker Paper Co.	4.15c
Fitchburg Paper Co.	4.29c
Stanford Paper Co.	4.52c
Frank Parsons Paper Co.	4.23c
Barton, Duer & Koch Paper Co.	4.34c
Marquette Paper Co.	4.44c
Graham Paper Co.	5.04c
Paper Corp. of U. S.	4.65c

No. 7—500,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide. (3-inch fiber cores).

John F. Post, Inc.	5.27c
Perkins-Goodwin Co.	4.24c
Mudge Paper Co.	3.984c
Whitaker Paper Co.	4.14c
Fitchburg Paper Co.	4.29c
Stanford Paper Co.	4.52c
Frank Parsons Paper Co.	4.215c
Barton, Duer & Koch Paper Co.	4.27c
Marquette Paper Co.	4.44c
Graham Paper Co.	5.04c
Paper Corp. of U. S.	4.65c

No. 8—400,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide (3-inch fiber cores).

John F. Post, Inc.	5.27c
Perkins-Goodwin Co.	4.24c
Mudge Paper Co.	3.984c
Whitaker Paper Co.	4.14c
Fitchburg Paper Co.	4.29c
Stanford Paper Co.	4.52c
Frank Parsons Paper Co.	4.225c
Barton, Duer & Koch Paper Co.	4.30c
Marquette Paper Co.	4.44c
Graham Paper Co.	5.04c
Paper Corp. of U. S.	4.65c

No. 9—250,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins. wide (3-inch fiber cores).

John F. Post, Inc.	5.27c
Perkins-Goodwin Co.	4.24c
Mudge Paper Co.	3.984c
Whitaker Paper Co.	4.13c
Fitchburg Paper Co.	4.29c
Stanford Paper Co.	4.52c
Frank Parsons Paper Co.	4.24c
Barton, Duer & Koch Paper Co.	4.30c
Marquette Paper Co.	4.44c
Graham Paper Co.	5.04c
Paper Corp. of U. S.	4.65c

No. 10—50,000 lbs., 25x38—80; rolls, 32 ins. wide (3-inch fiber cores).

John F. Post, Inc.	5.29c
Perkins-Goodwin Co.	4.32c
Mudge Paper Co.	4.134c
Cauthorne Paper Co.	4.32c
Whitaker Paper Co.	4.20c
Fitchburg Paper Co.	4.35c
Stanford Paper Co.	4.52c
Frank Parsons Paper Co.	4.32c
Barton, Duer & Koch Paper Co.	4.55c
Graham Paper Co.	5.05c
Paper Corp. of U. S.	4.435c

No. 11—250,000 lbs., 25x38—80; flat, cut 24x38, 33¾x64, and 38x48 ins.

John F. Post, Inc.	5.39c
Perkins-Goodwin Co.	4.42c
Mudge Paper Co.	4.234c
Cauthorne Paper Co.	4.68c
Whitaker Paper Co.	4.47c
Fitchburg Paper Co.	4.59c
Stanford Paper Co.	4.79c
Frank Parsons Paper Co.	4.385c
Barton, Duer & Koch Paper Co.	4.52c
Marquette Paper Co.	4.74c
Graham Paper Co.	5.25c
Paper Corp. of U. S.	5.07c

No. 12—400,000 lbs., 25x38—100; flat, cut 22¼x32¼, 24x38, 24¼x36¼, 31½x48, 32x42, 38x48 and 41x52 ins.

John F. Post, Inc.	5.14c
Perkins-Goodwin Co.	4.19c
Butler Paper Co.	4.66c
Mudge Paper Co.	4.234c
Cauthorne Paper Co.	4.37c
Whitaker Paper Co.	4.335c
Fitchburg Paper Co.	4.40c
Stanford Paper Co.	4.66c
R. P. Andrews Paper Co.	4.24c
Frank Parsons Paper Co.	4.186c
Barton, Duer & Koch Paper Co.	4.37c
Marquette Paper Co.	4.38c
Paper Corp. of U. S.	5.12c

No. 13—10,000 lbs., 25x38—120 and 140; flat, cut 29x41, 32x52, and 38x48 ins. Min. order 5,000 lbs.

Perkins-Goodwin Co.	4.47c
Stanford Paper Co.	4.66c
Paper Corp. of U. S.	4.75c

No. 14—15,000 lbs., blue and salmon, 25x38—70 and 100; flat, cut 25x38 and 38x48 ins. Min. order, one color, 5,000 lbs.

Stanford Paper Co.	(70 lb.)	9.00c
	(100 lb.)	8.00c
Paper Corp. of U. S.	(70 lb.)	5.37c
	(100 lb.)	5.49c

(Continued on page 24)

Demand for Kraft Supports Midwest Market

Chicago Reports Lag In General Demand With Prices On All Grades of Paper Firm and Sales of Kraft Aiding Entire Market — New Jobbing House of McIntosh Paper Co. Formed—Midland Contest—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 15, 1939.— Hearings were conducted at Chicago May 10-11 by the Federal Power Commission to prove its right to jurisdiction over the water power on the Wisconsin River over the contentions of the Wisconsin Public Service Corporation and the Wisconsin Public Service Commission that control rests with the State of Wisconsin. The question at issue is whether the Wisconsin River, lined with paper mills and mill-owned power dams, is a navigable stream and whether the dams have any effect on navigation.

In support of the navigation contention, the federal commission had as witnesses four of the oldtime lumberjack rivermen who floated logs down the river to the Mississippi and then to St. Louis. They described the "roaring days of 1876" when 75 per cent of the white pine, jack pine and spruce was carried downstream in log rafts from the northern Wisconsin woods. These methods are no longer used, since most of the timber movement is by truck and rail.

The Wisconsin Public Service Corporation recently completed two hydro-electric dams on the Wisconsin River, and are withholding a declaration of intentions concerning power operations until jurisdiction is established.

Tonnage of Pulp and Coal Off Last Year

Depressed business conditions of the last year are shown in tonnage and shipping figures issued by the War Department. The report of Lt. Col. W. H. Holcombe, district engineer, shows tonnage 12 per cent less than 1937. The figures embrace coal, pulp and pulp wood as major items.

Milwaukee's tonnage was 5,849,466 for the year 1938, with cargoes valued at $239,105,320, of which 54 per cent was coal and coke. Cargo values at other coal and pulp receiving ports in Wisconsin were: Marinette-Menominee, $18,147,255; Green Bay, $20,177,300; DePere, $151,945; Manitowoc, $87,674,690.

Edward Meyer Forms New Company

Edward H. Meyer, who resigned as president of C. R. Meyer & Sons Company, Oshkosh, Wis., builders of many paper mills, power dams and other projects, has organized a new construction firm known as the Edward H. Meyer Construction Company, with himself as president. Offices have been opened in the Hay Bldg., 75 Main St., Oshkosh. Mr. Meyer has been identified with construction work in Wisconsin since 1904. Baldwin C. Meyer is vice-president of the new firm, and E. F. Nelson, Jr., is secretary-treasurer. Incorporation papers have been filed with the secretary of state.

J. M. Conway Presides at Chamber

J. M. Conway, president and general manager of the Hoberg Paper Mills, Inc., Green Bay, Wis., presided at a dinner last week of the Green Bay Chamber of Commerce at which U. S. Senator Alexander Wiley of Wisconsin was the speaker. Mr. Conway is a director of the United States Chamber of Commerce.

Bergstrom Constructs Chemical Building

Construction of a chemical building has been authorized by the Bergstrom Paper Company, Neenah, Wis., adjacent to its mill. The structure will be 15 by 33 feet, of glass, brick and concrete construction.

Shattuck Speaks on Industrial Relations

S. F. Shattuck, vice-president of Kimberly-Clark Corporation, Neenah, Wis., was one of the principal speakers at a meeting at Oshkosh, Wis., May 6 of the Wisconsin Vocational and Adult Educational Association, using the subject "Industrial Relations."

Basing his message on the Kimberly-Clark policies, he declared industry must so conduct itself that the processes of democracy are supported. "Sound and cooperative industrial relations", he said, "are essentially democratic."

The relation between the local industrial institution and its community can never be higher than the level of the relationship that exists between the employes and the management, Mr. Shattuck pointed out. What the employes say about a concern is what counts rather than what its officers and directors have to say about it. Stressing the importance of the individual in industry, the speaker declared that in the last analysis, the safety and soundness of a business enterprise rests in the skills, training and personalities of its people.

He illustrated his point by referring to the Kimberly-Clark mills in Wisconsin, in which more than 500 employes are taking courses in vocational schools in their respective localities.

Strange-Alsted Engagement Announced

The engagement was announced last week of John G. Strange, secretary of the Institute of Paper Chemistry, Appleton, Wis., to Miss Mary Alsted of Appleton. Miss Alsted is the daughter of the late Lewis L. Alsted, who was president of the Combined Locks Paper Company. No plans have been made for the wedding.

Driessen-Hartmann Nuptials

Robert E. Driessen of Kaukauna, Wis., and Miss Margaret Hartmann of Athens, Wis., were married at St. Anthony's Catholic church at Athens May 8. Mr. Driessen is on the engineering staff of the Thilmany Pulp and Paper Company at Kaukauna. They will reside for the summer at Shore Acres, near Appleton, Wis.

To Distribute Ajax Couplings

The Chicago Pulley and Shafting Company of 17-23 North Desplaines street, Chicago, has been appointed distributor of Ajax flexible couplings.

Federal Commission Seeks to Prove Rights

Hearings Held At Chicago By Federal Power Commission To Prove Jurisdiction Right To Water Power On Wisconsin River — Tonnage of Pulp 12 Per Cent Lower Last Year — New Edward Meyer Co. Formed.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 15, 1939.—The Chicago paper market went into the second week of May with little or no increase in general demand apparent. Markets for the most part gave some slight indication of more interest in spring commitments and the undertone in virtually all grades remained firm. Kraft reports were favorable with retail selling outlets helping to firm the market. Newsprints were about the same, though groundwoods were reported as slightly more active with the market firm. Sulphites made little change during the week. The demand for book paper was somewhat improved with more orders reported from several sources. Covers were about the same. Little news came from bond and ledger houses who were concentrating on spring sales policies. Wastepapers continued firm.

McIntosh Paper Co. Formed

Chicago had a new paper jobbing house this week as the McIntosh Paper Company, formed May 1, got into active business from new offices and headquarters including warehouses at 111 N. Canal Street. The offices and warehouse comprise over 25,000 square feet of floor space to house the new firm capitalized with $75,000 of preferred stock and 1250 shares of no-par common stock. Fine papers are to be carried in stock for immediate delivery and the concern is well set up to handle large orders for direct shipment from the mills with whom the McIntosh Paper Company has made connections. The officers of the new company are made up of former sales executives of Bradner Smith & Company including W. M. McIntosh who has been vice president and sales manager of the well known Chicago concern for over ten years.

Eight well known members of the sales staff of Bradner Smith & Company likewise withdrew from Bradner Smith and went into the McIntosh organization according to local reports. The list included R. W. Keyt, long associated with Bradner and the Swigart Paper Company who will serve as first vice president and sales manager of the McIntosh Paper Company. J. J. Barrett, second vice president, was with Bradner for 13 years while R. A. Freeman, treasurer of the new firm, was with Bradner for nearly eight years. J. E. Blomquist, secretary, likewise was identified with Bradner Smith & Company for many years. Other directors of the new company include Sidney Richards, W. R. Fraley, H. F. Pfister and H. B. Johnson who have a combined term of service with Bradner Smith & Company amounting to nearly seventy years. The McIntosh Paper Company will announce the mills whose lines it is to handle in the very near future.

S. Eney Talks to Lithographers Club

Summerfield Eney of the Champion Paper & Fibre Company was a recent guest speaker at a meeting of the Lithographers Club of Chicago. Mr. Eney discussed "Paper and Offset Lithography", explaining difficulties in the use of coated papers and the way in which such difficulties were solved.

Dwight Bros. Elect New Officers

New officers of the Dwight Bros. Paper Company were announced at the recent annual meeting of the well known Chicago jobber concern. J. B. Ughetti was elected president after having served as executive vice president for over a year. H. J. McLaughlin is the new first vice president while W. S. Heberling, G. W. Carlson and L. C. Field were also named vice presidents. C. S. Kostulski is the secretary and treasurer.

Midland Co. Open Prize Contest

An attention arresting folder from the Midland Paper Company Division of the Zellerbach Paper Company was received in the Chicago paper market this week. The mailing piece describes the offering of $5000 in cash prizes for the best sample of forms or form letters mimeographed on Nekoosa Mimeo Bond. A local contest is tied up with the local jobber while the national contest is also included whereby local contest winners qualify for the national. All entries must be mailed to the Nekoosa-Edwards Paper Company before October 15 and entry blanks are made available through local paper merchants. The entry blank contains space for the name of the paper merchant who sold the Mimeo Bond.

Forests of Southwest Louisiana

The Southern Forest Experiment Station has just sent out Forest Survey Release No. 43, "Forest Resources of Southwest Louisiana," by James W. Cruikshank of the Southern Forest Survey staff. This report is of especial interest because it deals with a section of the country that contains the largest proportion of clear-cut forest land in the South. It shows what happens to a forest region when a virgin stand of timber is liquidated with machine logging and with no thought for a new forest crop.

The Forest Survey found that over one million acres of forest land was clear-cut so heavily that planting would be necessary to restore it to productivity. A limited supply of old-growth timber remains and a considerable supply of second growth has restocked a portion of the area. Although the forest industries have been gradually shrinking, the annual growth is insufficient to meet the wood requirements of those now operating.

In order to restore the forest land to a degree of productivity commensurate with the growth possibilities of the soil and climate, we emphasize the need for increased fire protection, reforestation of the clear-cut areas, and a more general adoption of forest management practices. These are first steps in returning the forest land to its former high place in the economy of the region.

Discusses Rights of Abitibi Bondholders

Pamphlet Prepared By Stanley Stanger Presents Theories of Absolute Versus Relative Priority Rights of Holders of Abitibi Power & Paper Securities — Alliance Negotiating To Purchase Don Valley Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 15, 1939.—Members of the various protective committees of Abitibi Power & Paper Company have received copies of a second pamphlet prepared by Stanley Stanger of the Guardian Trust Company, Montreal, with regard to the controversy excited by his first pamphlet suggesting compromise is a better method than foreclosure to follow to re-organize Abitibi Power & Paper Company. The new pamphlet discusses the opposing theories of absolute versus relative priority rights of security holders. The theory of absolute rights was thus expressed to Mr. Stanger by an insurance company executive. If the rights of the first mortgage bondholders are not absolute, and they cannot exercise them to the full extent of the deficiency judgment and to the total exclusion of trade creditors and shareholders, then what good are they.

Stanley Stanger Comments on Situation

Mr. Stanger's answer is: No one denies prior rights of bondholders, but there have been many divergent judicial interpretations on the meanings of rights. One must face the fact that if the bondholder has the full regal right of foreclosure, of which there is some uncertainty, he has seldom exercised it. The implication here is that in actual practice the failure of bondholders to assert their full legal rights points to the probable existence of other rights.

Mr. Stanger says that, in discussing this question, a distinction must be made between the ordinary dwelling mortgage and the ordinary corporate mortgage. With the respect to the latter, he claims there is an important difference between legal theory and actual business practice when it comes to enforcing legal rights. He declares that the practice of compromise in corporate reorganization is not a similar matter of legal principle; it is a matter of course. Reorganization through compromise, he says, has grown in popularity simply on account of the abuses which crept into the foreclosure method.

Sale by Foreclosure Called Unworkable

"The method of permitting the sale by foreclosure, subject to a high upset price, paying off the dissenters in cash, is ordinarily uneconomical and unworkable. A high upset price would prevent the sale, because too many hondholders would dissent and demand cash, and the sale could not be financed. The court is therefore obliged to fix an upset price which is far below intrinsic values, below even the par value of the bonds, to make a sale feasible. The result, of course, is a gross injustice to dissenting bondholders, or to the isolated small bondholders who cannot be reached or who may not comprehend the legal verbiage and high-sounding phrases of the usual financial plan. These circumstances impose upon the court an obligation to give sympathetic consideration to the proposals of other interests, especially when other interests include bondholders, which is the case in Abitibi."

Mr. Stanger argues that even a compromise is a foreclosure on the rights of junior creditors and investors to control and on their rights to claim extraordinary profits until bondholders are indemnified. The only rights of junior creditors recognized under a compromise are to share in expected profits to be derived by a solvent company in a normal business period under competent and aggressive management.

Bondholders Rights in Case of Default

Mr. Stanger agrees that the debt becomes due in the event of default, but argues that that is no reason for bondholders claiming more than a bond would be worth if default had not occurred. The bondholder has the right to his claims, but no more, according to the relative priority doctrine. The latter, he claims, is the form of corporate reorganization most commonly employed.

"If one can judge by modern legislation and by what has occurred in corporate reorganization, one may safely assume that the doctrine of absolute priority will never regain its full force and power. For the custom of compromise has been too firmly established to be thrown out by judicial veto. And perhaps it is just as well, for the old doctrine of absolute priority was never well fitted to corporations. Until there is some change in law and procedure, the purchaser of corporation bonds must continue to speculate on the uncertainty of his rights as a creditor."

Alliance May Buy Don Valley Mill

Negotiations are under way for the purchase of Don Valley Paper Co., Limited, Toronto, by Alliance Paper Mills, Limited, of Merritton, Ont. It is expected that negotiations will be concluded shortly. The Alliance Paper board of directors will then hold a meeting to pass upon the deal.

B. S. Miller Joins Read Directorate

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., May 15, 1939—A meeting of the board of directors of Robert E. Read, Inc., was held this week at which Byron S. Miller, of Miami Beach, Florida, was chosen a member. An official of the company stated that Mr. Miller has been interested in the local concern for some time but because of his southern interests he had been represented at meetings by George John Miller, a membre of a prominent law firm of New York City. Mr. Miller, the newly elected director, is engaged in real estate development in Florida and also owns and operates a large cattle farm at Honesdale, Pa. The business of the company is developing rapidly and a force of about twenty hands are being employed on two shifts of eight hours each. It is understood that plans call for the employment of another shift in the near future.

Spring Floods Damage Canadian Plants

Dams of New 16 Million Dollar Hydro-Electric Power Development Jointly Owned By Brown Corp. and Shawinigan Power Co. Damaged By Rushing Water — Fires Cause $13,400,000 Timber Loss — Other News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 15, 1939.—To those engaged in the pulp and paper industry the main interest in the past week has centered on spring floods in the rivers on which their plants are situated, which in a number of cases has caused heavy damages. The most serious damage has occurred at La Tuque, on the St. Maurice river, where the Brown Corporation and the Shawinigan Water and Power Company, joint controllers of a subsidiary company known as the St. Maurice Power Corporation, are engaged in constructing a hydro-electric power development estimated to cost between $16,000,000 and $20,000,000.

Floods Damage New Power Plant

The St. Maurice river provides the power for a preponderant number of the pulp and paper plants of the province, and is the best artificially controlled river, as regards volume of flow, in the country.

Yet during the past week it suddenly got out of bounds owing to unseasonably warm weather rapidly melting the snows in its watershed, and a raging flood did tens of thousands of dollars worth of damage to the works on the new plant under construction at La Tuque. The raging water carried away the centre part of the cofferdam (the water-tight case used in the dam construction) and carried away an enormous derrick. The downward rush of water was so torrential that strips of earth 100 to 150 feet in length were torn from the banks. Fortunately the dam remained intact, and no loss of life was reported .

At Chicontimi, another pulp and paper centre, the flood-swollen waters of the Riviere a Mars swept away the centre support of the bridge linking up Bagotville, Port Alfred and Grand Bay. The Riviere a Mars is a tributary of the Saguenay River.

To Build Bridge at Conneau Bay

Premier Duplessis has announced that a new bridge, to cost more than $100,000, will be built over Portneuf river at Ste. Anne de Portneuf, and that construction will start shortly. This bridge will offer advantages of an important highway out of Comeau Bay, linking that town with the rest of the province. Comeau Bay is the new model town built around the giant newsprint plant recently established there as a source of newsprint supply for the New York Daily *News*.

Heavy Forest Fire Losses

Forest and bush fires in Quebec province destroyed timber valued at $13,400,000 last year according to Henri Keiffer, chief of the Provincial Forestry Protective Service.

A total of 1,150 fires burned over 268,000,000 cubic feet, representing 268,000,000 in board measure or 2,680,000 cords of wood, Keiffer said.

"Investigation by our forest fire-fighting crews showed that lightning was responsible for 46 of the fires, while 1,104 were due to negligence."

Of the outbreaks in the negligence column, Mr. Keiffer declared, half are believed to have had their start in unwatched slash fires set by settlers.

TAPPI Meets at Vancouver

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., May 13, 1939—L. H. Andrews, Control Superintendent Powell River Company Ltd., Powell River B. C. was chairman of a well attended week-end meeting of the Pacific Coast division of the Technical Association of the Pulp and Paper Industry held at the Terminal City Club, Vancouver May 6. Featured speaker was C. V. Orchard, assistant chief forester of the British Columbia Forestry Department, who augmented his address by a presentation of motion pictures taken in the woods by the Department. Mr. Orchard spoke on "Some aspects of Forest Administration in Relation to the Pulp and Paper Industry."

Two years ago the Pacific Tappi decided to hold a series of monthly meetings during the fall and winter at the larger centres on the Oregon, Washington and B. C. pulp and paper front. The Vancouver B. C. meeting entailed considerable mileage for those coming from the more southern points and consequently it was decided to hold the meeting on a Saturday evening and following up with golf on the Sunday. The innovation proved a great success and drew a very large and widely representative attendance from the three Pacific Coast States and from the Province of British Columbia.

Supporting the main address was another prepared by the Nichols Engineering and Research Corporation of Canada on the economics of pyrites burning, pertaining particularly to the Pacific Coast sulphite industry, and also embracing various technical problems connected with the use of pyrites in the sulphite mills.

"Trees and Men" was the title of a talking movie film presented through courtesy of the Weyerhaeuser Timber Company. Musical selections and community singing rounded out the highly varied agenda. Arrangements for the dinner were carried out by a Vancouver committee headed by A. E. Baker, purchasing agent, B. C. Pulp and Paper Company Ltd. and W. C. Grieve, manager of the Mechanical Goods Division of the Goodyear Tire and Rubber Company.

Improving Fenimore Mill

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., May 15, 1939—Improvements are under way at the Fenimore mill of the Union Bag and Paper Company where the height of the digester building is being lowered by company employees to conform with the height of the remainder of the plant. When alterations are completed there will be room for the storage of 2,500 tons of pulp. The company is also considering enlargement of the finishing room in the paper mill with the erection of an addition on the east side.

Association Recommends Saturday Closing

Paper Trade Association Requests Merchants To Continue Last Year's Custom and Close On Saturday For Summer—Scott Paper Co. Increases Output 20 Per Cent—Garrett-Buchanan Buys Building — Other News.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 15, 1939—With summer weather on the doorstep and most people vacation-minded, the Board of Governors of the Paper Trade Association of Philadelphia has sent out the following bulletin to the trade: "After due survey of the sentiment of the paper trade as regards closing on Saturdays during June, July and August, your Board of Governors requests that the custom of last year be continued this coming summer, namely: Saturday closing from June 3d to September 2, 1939 inclusive. It is, of course, understood that this will mean no telephone or delivery service."

Scott Paper Increases Output 20 Per Cent

Commenting on the progress of the Scott Paper Company in its expansion program, Thomas B. McCabe, president, in his remarks to shareholders said: "In the seven months from Oct. 1, to April 30, Scott Paper Company has completed the greatest plant expansion, betterment and repair program in its history. Potential paper making capacity has now been increased 20 per cent, steam and electric power and generator capacity increased 83 per cent, water intake and filtration capacity increased 25 per cent and capacity of its pulp receiving, storage and handling facilities increased 50 per cent. Capital additions for the seven-month period were over $2,823,000, and maintenance and expense charges over $250,000.

Scott Co. Celebrates Basketball Victory

Scott Paper Co. celebrated the winning of the Delri basketball championship on Thursday evening last in the Chester Club, with the leading dignitaries of the company joining with prominent guests from industrial and civic life to pay homage to the team that won out in the thrilling title series with General Steel to conclude the recent campaign.

Karl Howard, works manager of the General Steel, presented the MacMurtrie trophy, symbolic of the Delri championship, to Thomas B. McCabe, president of the Scott Paper Company. General Steel won its first leg on the trophy in 1937-38, and held possession for one year. Scott Paper Co. becomes the third plant to hold a leg on the award, which will be kept in competition until one plant wins three times. Sun Oil was first to win a leg on the beautiful trophy.

After receiving the laurels from the General Steel leader, Mr. McCabe turned the award over to Coach Danny Hayes, the playing pilot who led the Scott team to the top of the Delri in his first year at the helm. The Scott Paper head also presented Coach Hayes and fourteen officials and players of the team with small gold basketballs as a personal tribute in honor of their achievement. A former athlete himself, Mr. McCabe takes a great interest in the progress of the plant teams and the Delri League, and helped to stimulate league interest with the presentation of the Thomas B. McCabe Trophy for the Delri Bowling championship, an award similar to the MacMurtrie one in basketball.

Donor of Trophy Congratulates Winning Team

Andrew A. MacMurtrie, donor of the trophy, was also present and congratulated the winning team and the plant for their showing in the recent campaign. The Sun Oil plant superintendent, one of the originators of the present Delri League, told of the problems that confronted the founders in erecting the league to its present status and said that the three months ruling kept the circuit on a strictly amateur plane and was the salvation of the industrial sports.

Walter Griscom, E. S. Wagner, John McKardy and Louis "Larry" Trumbull, were other speakers from the Scott Paper Company, while J. Newton Pew, president of the Delri League, and William J. Burk, vice-president of the league and sports editor of the Chester Times, completed the list. President Pew presented the Scott Paper team with another trophy, symbolic of winning the second half honors in the Delri. This is a permanent award. Andrew Schroder proved to be a witty and entertaining toastmaster and kept the jovial affair moving at top speed from start to finish.

The banquet was another tribute to the good work that is being done by the Delri, and the proof that the spirit of sports fraternalism is spreading among the various industries.

Garrett-Buchanan Purchases Building

Garrett-Buchanan Company has this week purchased the four-story building, 407-15 N. 8th street, which has been occupied by them since February as a warehouse. This building which is fireproof throughout has four floors and basement. It is equipped with a railroad siding, and after renovation will have new elevators to take care of the fast growing business that this company enjoys.

Walton Plant Fire Loss $100,000

Walton Company of Lititz, Pa., sustained a loss of more than $100,000 during the week from a fire which demolished the company's plant here. It is thought that the flames broke out on the third floor of the tissue products factory in what is known as the core room. A spark from a machine switch apparently fired paper dust around it.

Crane Gets Distinctive Paper Award

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 17, 1939—Crane & Co., Inc., has been awarded the contract by the Treasury Department for furnishing approximately 96,000,000 sheets or 1,160 tons of the distinctive paper for currency for the fiscal year beginning July 1 next, at 36½ cents per pound. The Crane Company has the present contract for this paper at 38 cents. Distinctive paper will be furnished by the same company for public debt security, although no estimate is made of the amount of paper which will be needed for these securities. Crane & Co., were the only bidders at the opening last week.

Financial News of Pulp and Paper Industry

Abitibi Bond Deposit Plan—Increased Number of Shares For Robert E. Read—Scott Paper Issues Quarterly Report—Propose Plan of Recapitalization For Brown Co.—Increased Net Earnings For Lily-Tulip Corp.

New York Stock Exchange

High, Low and Last for the Week Ending May 17, 1939

	High	Low	Last
Armstrong Cork Co.	38¾	36	36
Celotex Corp.	12½	11⅜	11½
Celotex Corp., pf.	64	64	64
Certain-Teed Products Corp.	8	7	7⅜
Certain-Teed Products Corp., pf.	29¼	25	25
Champion Paper & Fibre Co.	21½	20¾	20¾
Champion Paper & Fibre Co., pf.	99¾	99½	99½
Congoleum-Nairn Co.	23	21⅝	21⅝
Container Corp. of America	10⅝	10⅜	10⅜
Continental-Diamond Fibre Co.	6	6	6
Crown-Zellerbach Co.	11¼	10⅞	11
Crown-Zellerbach Co., pf.	79⅜	78½	78½
Flintkote Co.	20¼	18¼	18⅝
Robert Gair	2⅝	2¼	2¼
Robert Gair, pf.	9½	8⅛	8⅛
International Paper & Power	8⅜	7⅞	7⅞
International Paper & Power, pf.	32	28½	29
Johns-Manville Corp.	72⅛	67½	67½
Johns-Manville Corp., pf.	127⅞	125	127⅞
Kimberly Clark Corp.	23½	23	23½
MacAndrews & Forbes	28½	28½	28½
Masonite Corp.	39¼	37½	37½
Mead Corp.	8¾	8½	8½
Mead Corp., pf.	54	54	54
Paraffine Companies, Inc.	44	44	44
Rubberoid Co.	23	23	23
Scott Paper Co.	48⅞	48½	48½
Scott Paper Co., pf.	115½	115	115½
Sutherland Paper Co.	28	26¾	26¾
Union Bag & Paper Corp.	8⅝	8	8⅛
United Paperboard Co.	4¼	4¼	4¼
U. S. Gypsum Co.	85½	83¾	84
U. S. Gypsum Co., pf.	173	173	173

New York Curb Exchange

High, Low and Last for the Week Ending May 17, 1939

	High	Low	Last
American Box Board Co.	6¾	6¾	6¾
Brown Co., pf.	14⅛	14⅛	14⅛
St. Regis Paper Co.	2⅛	2	2
St. Regis Paper Co., pf.	38	37	37
Taggart Corp.	3¼	3⅛	3⅛

Plan For Abitibi Bonds

Herbert J. Symington, K. C., chairman of the bondholders' protective committee for the Abitibi Power and Paper Company first mortgage bonds, has announced that the registration statement for its certificates of deposit is now effective and that copies of the prospectus, together with copies of the plan of procedure adopted by the committee and forms for deposit of bonds, are available for distribution. Bonds may now be deposited in the United States at the City Bank Farmers Trust Company, New York, and the Continental Illinois Bank and Trust Company of Chicago.

Deposits of bonds in Canada have been large, Mr. Symington reported. Although holders who had deposited their bonds with the committee prior to the announcement of the plan were given the right to withdraw prior to April 28, 1939, withdrawals have been relatively small.

The plan has the support in Canada of the Dominion Mortgage and Investments Association, the Sun Life Assurance Company of Canada, the Canada Life Assurance Company, the London Life Insurance Company, the Mutual Life Assurance Company of Canada, Confederation Life Association, the Manufacturers Life Insurance Company and other institutional holders in Canada, the Investment Protection Committee of the British Insurance Association, and the Association of Investment Trusts, London, England.

The membership of the bondholders' protective committee, which is sponsoring the plan of procedure, consists of Herbert J. Symington, K. C., vice president Royal Securities Corporation, Ltd., of Montreal; W. A. Arbuckle of Montreal, Andrew Fleming of Montreal, Stanton Griffis of Hemphill, Noyes & Company, New York; Right Hon. Arthur Meighen, K. C., P. C., of Toronto; Edward E. Reid, managing director the London Life Insurance Company of London, Ont.; Joseph P. Ripley, president Harriman, Ripley & Co., Inc., of New York, and W. H. Somerville, general manager the Mutual Life Assurance Company of Canada, of Waterloo, Ont.

Robert E. Read, Inc. Increases Stock

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., May 15, 1939—A certificate filed this week under state laws shows that Robert E. Read, Inc., manufacturers of moulded pulp products, has increased the number of shares of its stock. The concern filed incorporation articles in 1936 listing 4,000 shares of which 1,000 are $100 par preferred and 3,000 are not par common. Under the new arrangement there will be 4,200 shares divided into 1,000 of $100 par preferred, 3, 1000 of class A no par common and 200 of class P no par common having no voting rights. The officers of the company include Robert Read, president, Robert T. Puffer, vice president, and John A. Remington, secretary.

Scott Earns $446,593

Scott Paper Company for March quarter reports earnings before income and capital stock taxes of $446,593, compared with $459,653 a year before. Net earnings after taxes and dividend on $4.50 cumulative preferred shares issued on Sept. 1, 1938, $288,983, equal to 46 cents each on 620,790 common shares outstanding on April 2, 1939. Net earnings in first quarter of 1938 after taxes were $356,414, equal to 57 cents each on same number of common shares.

Brown Co. Reorganization

PORTLAND, Me., May 15, 1939—Brown Company, interests have filed in the Federal District Court here a proposed plan of recapitalization which is expected to serve as a basis for discussion in perfecting the plan which is a vital prerequisite to the advance of a $9,000,000 loan by the Reconstruction Finance Corporation. Under the plan as submitted on behalf of the company, 63.6 per cent of the new common stock would be issued to holders of the present common stock who, with one exception, are members of the Brown family. Under the plan each $1000 bond and accrued interest would be issued, a $600 general mort-

gage 5 per cent bond due Dec. 1, 1958, a $600 6 per cent income debenture maturing December 1, 1958, convertible into 60 shares of new common, 20 shares of new common and a minor cash interest adjustment. For each of the 100,000 shares of 6 per cent cumulative preferred, carrying an accrual of $50 per share, would be issued 1 1-5 shares of new $5 preferred and two shares of common. Creditors with claims of less than $500 would be paid in full in cash, while others would have the option of accepting $500 in cash or 3 per cent notes, maturity not specified, for their claim, plus interest accrued from September 15, 1935, to November 30, 1938.

Sandy Hill Works Elects Officers

HUDSON FALLS, N. Y., May 13—Stockholders of the Sandy Hill Iron and Brass Works, Inc., have re-elected Frank A. Juckett as president. Other officers named include Richard C. Tefft, of Boston, vice president; W. J. Simpson, secretary and treasurer, and J. Walter Juckett, assistant treasurer. The directors re-elected include R. C. Tefft, F. A. Juckett, C. W. Kellog, Allen McIntyre and P. J. Riley.

Lily-Tulip Earns $1.62 Share

Lily-Tulip Cup Corporation and subsidiaries reports for twelve months to March 31, net profit of $306,175, after deducting hurricane loss of $206,028, equal to $1.62 a share on 189,539 capital shares. Company states that profit before hurricane loss was $460,696 for the period, equal to $2.43 a share. For the twelve months to March 31, 1938, the company showed a net profit of $297,818, or $1.57 a share.

Forms Southland Paper Co.

MEMPHIS, Tenn., May 15, 1939—Ike Gronauer, vice president and general manager of the Memphis Paper Company, has resigned after 43 years continuous service to open his own firm, the Southland Paper Company, at 11 Nettleton avenue. Active in civic enterprises, Mr. Gronauer is a member of the Memphis Housing Authority. His son, M. H. Gronauer, is associated with him in the new paper company.

Dixie-Vortex Nets $719,548

Dixie-Vortex Company and subsidiaries for twelve months to March 31 report a net profit of $719,548, equal after dividend requirements on Class A stock, to $1.34 each on 202,666 shares of common stock, against $899,154, or $2.23 a common share for the twelve months to March 31, 1938.

Albemarle Profits Lower

The Albemarle Paper Manufacturing Company reports for the year to March 31 a net profit of $21,731, including a profit of $220,000 on the Albemarle-Chesapeake Company stock, compared with $296,246 for the year to March 31, 1938.

Soundview Nets $80,669

The Soundview Pulp Company and subsidiaries for four months to April 30 report a net income of $80,669, equal to 8 cents a share on the common stock outstanding, against $246,724 or 42 cents a share in corresponding period last year.

B. C. Pulp & Paper Co. Elects Officers

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., May 13, 1939—Re-election of Lawrence Killam as president of the B. C. Pulp and Paper Company featured the annual meeting of the company held at Vancouver, B. C., recently. In his report to the annual meeting, Mr. Killam stated that collapse of the Far Eastern markets due to war conditions and the resulting closing down and severe curtailment of the operations of the two plants of the company at Woodfibre and Port Alice, B. C., had resulted in an unfavorable credit report.

"General conditions of world trade and the impossibility of filling outstanding orders in certain countries due to restrictions imposed by their governments combined to force reduction of operation of your company's mills," states Mr. Killam. "Port Alice was closed for eight months and Woodfibre for nearly four.

"Other mills in North America were similarly affected. A published report on certain European mills indicates that their costs of production are higher than the prices realized.

"Partial operation while keeping the company's two plants well maintained, and low prices for pulp, have caused losses during the past several months, but the plants are now in better condition to meet demands for superior products than they ever were."

George Kidd was re-elected vice-president, and Oscar A. Jorgenson was re-elected treasurer, with Miss E. M. Dominy as secretary. Directors are W. H. Malkin, R. C. Buchanan, George Kidd, Cecil Killam, I. W. Killam, Lawrence Killam, O. A. Jorgenson.

I. P. & P. Co. Nets $12,428

Richard J. Cullen, President, in submitting statement of consolidated profit and loss of International Paper and Power Company and subsidiary companies (excluding International Hydro-Electric System and its subsidiaries) for the first quarter of 1939, together with comparative figures for the corresponding period in 1938, states that, "Volume of business showed substantial improvement as compared to the abnormally low level prevailing during the first quarter of 1938, but this was in part offset by lower prices this year for several of the company's products. Operations for the quarter resulted in a net profit of $12,428 as compared to a loss of $124,935 during the first quarter of 1938. In April, 1939 production of white paper from 100 per cent bleached sulphate pulp was started at Southern Kraft Corporation's new mill at Springhill, La. It is expected that this operation will utilize the full production of the bleached sulphate pulp unit at this mill."

Goes With L. L. Brown Paper Co.

Frank E. A. Larson of Washington, D. C., has been appointed to the sales staff of the L. L. Brown Paper Company, Adams, Mass. Mr. Larson has had very extensive and well-balanced experience in the manufacturing, technical and marketing phases of high-grade papers. His sales work has embraced such activities for both mills and merchants. At one time Mr. Larson served with the Public Printer of the United States, the Commonwealth of Pennsylvania and the United Typothetae of America in establishing paper standards and specifications.

New TAPPI Members

Gustav G. Bunzl, sales management, Ortmann Paper Mills of Bunzl and Biach British Ltd., 37 Chiswell street, London, E. C. 1, England, was educated in the Paper Department, School of Technology, Manchester and Technical School, Vienna. He was formerly with A. E. Reed & Co. Ltd., Dartford, Kent; Ortmann Paper Mills, Lower Austria; Kellner Partington, Villach, Austria; Lenzing Pulp Mill, Upper Austria, and Ortmann Paper Mills of Bunzl and Biach, Vienna. He is a member of the Technical Section, British Paper Makers Association.

Howard J. Billings, chemical engineer, Arthur D. Little, Inc., Cambridge, Mass., graduated in 1916 from Lowell Textile Institute. He was formerly with the U. S. Cartridge Company, Lowell, Mass. and Oxweld Acetylene Co., Newark, N. J. He has been with Arthur D. Little, Inc. over 19 years.

Thomas T. Dunn, chief engineer, Pulp and Paper Mill Division, Gaylord Container Corporation, Bogalusa, La., is a graduate of Louisiana State University. He was formerly with Bogalusa Paper Company, Bogalusa, La. as plant engineer.

Charles Q. Ives, research and development, operating own laboratory, 132 Oak street, Reading, Mass., was educated at Exeter Academy. He was formerly with the Gulf Refining Company, Ward Industries Board, Brown Company, Widger Miller Company, and Sherman Paper Products Company.

William F. Talbot, research chemist, Dennison Manufacturing Company, Framingham, Mass., received a Ph.D. degree from the State University of Iowa and he was formerly with E. I. duPont de Nemours Inc., Wilmington, Del. and G. J. Essekn Inc., Boston, Mass. He was recently elected chairman of the New England Section of TAPPI.

Loren V. Forman, student, Institute of Paper Chemistry Appleton, Wis., received a B.S. degree from Iowa State College and a M.S. from the Institute.

James A. Higgins, chief engineer, John Dickinson & Co. Ltd., Croxley Mills, Watford Herts, England, has been with this company for 8 years and was formerly with the Albion Motor Works, Glasgow. He received a A.R.T.C. from the Royal Technical College, Glasgow, in 1929.

Edwin S. Roscoe, chief engineer, paper division and research engineer, Yawman and Erbe Mfg. Co., Rochester, N. Y., is a graduate of the University of Rochester and was formerly with the Franklin Automobile Company, Syracuse and High Speed Hammer Company, Rochester.

Clifford J. Yarber, general superintendent, Chemical Paper Manufacturing Company, Holyoke, Mass., has been with this company for 20 years, and for the past 8 years has been the company's general superintendent.

Casper E. Youngchild, general manager, Book, Bond and Groundwood Specialties Divisions, International Paper Company, Research Division, S. Glens Falls, N. Y., was formerly with the Marinette and Monominee Paper Company, Marinette, Wis., Nekoosa-Edwards Paper Company, Port Edwards, Wis. and Southern Kraft Corporation, Mobile, Ala.

George A. Hawkins, director of research, the Glidden Company, Naval Stores Division, Jacksonville, Fla., is a graduate of the University of Florida.

Auguste D. Levert, assistant general superintendent, Gaylord Container Corporation, Mill Division, Bogalusa, La. was formerly with the Bogalusa Paper Company and a graduate of Louisiana State University.

Government Paper Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 17, 1939—The Mudge Paper Company has been awarded the contract for furnishing the Government Printing Office with 15,600 pounds (200,000 sheets) of 24 x 38 inch, 75 per cent rag, lithograph finish map paper at 11.81 cents, bids for which were received on April 28.

Barton, Duer & Koch Paper Company will furnish 40,000 pounds of ivory colored calendered tag board in 23¼ inch and 26½ inch rolls at 8.65 cents, bids for which were received on April 21. The same company will also furnish 10,000 pounds same green at 7.9 cents, bids for which were received on April 28. R. P. Andrews Paper Company will furnish 4,800 sheets of 20 x 30 inch white tissue paper at $20.

The Printing Office has received the following bids for 159,000 pounds (1,000,000 sheets) of 31½ x 48 machine finish book paper; Frank Parsons Paper Company, 4.49 cents; Mudge Paper Company, 4.75 cents; Perkins-Goodwin Company, 4.61 cents; John F. Post, Inc., 5.14 cents; Stanford Paper Company, 4.59 cents; Barton, Duer & Koch Paper Company, 4.41 cents; R. P. Andrews Paper Company, 5.14 cents; Whitaker Paper Company, 4.47 cents; Cauthorne Paper Company, 4.57 cents; Marquette Paper Company, 4.39 cents; Graham Paper Company, 5.16 cents; Walker, Goulard Plehn Company, 4.6 cents; and Enterprise Paper Company, 4.44 cents.

For 500 rolls of gummed No. 2 kraft tape paper in 3 inch rolls; R. P. Andrews Paper Company, 32.44 cents per roll; and Nashua Package Sealing Company, 27 cents.

For 24,825 pounds (100,000 sheets) of 75 per cent rag lithograph finish map paper; for 9,775 pounds, 38 x 48 ; Mudge Paper Company, 11.69 cents; R. P. Andrews Paper Company, 12.8 cents; Barton, Duer & Koch Paper Company, 11.73 cents; Stanford Paper Company, 12.2 cents; Old Dominion Paper Company, 11.78 cents; Walker, Goulard Plehn Company, 11.8 cents; and Mathers-Lamm Paper Company, 13.99 cents. For 15,050 pounds, same 44 x 64; same bidders, same prices.

For 100,000 sheets of 22 x 35 white railroad board; Whitaker Paper Company, $26.28 and $25.49 per M sheets; Stanford Paper Company, $25.99; Barton, Duer & Koch Paper Company, $25.75; R. P. Andrews Paper Company, $26.12; Mudge Paper Company, $27.83; Paper Corp. of U. S., $26.43 and $25.75.

For 5,000 pounds of No. 1 gummed kraft paper in 24 inch rolls; Resolute Paper Products Corp., 6.86 cents less 2 per cent; Mudge Paper Company, 6.99 and 6.84 cents; Enterprise Paper Company, 6.93 cents less 2 per cent; R. P. Andrews Paper Company, 7.5 cents; Whitaker Paper Company, 7.75 cents; Walker, Goulard Plehn Company, 8.5 cents less 2 per cent; Mathers-Lamm Paper Company, 6.75 cents; Andrews Paper House of York, 7.25 cents; Cauthorne Paper Company, 6.878 cents; Barton, Duer & Koch Paper Company, 7.16 cents; and Stanford Paper Company, 7.5 cents.

Dinner To Be Tendered Isaac Gilman

A dinner to honor the business and communal accomplishments of Isaac Gilman of the Gilman Paper Company, will be tendered by the Paper and Allied Trades Division of the United Jewish Appeal for Refugees and Overseas Needs, on Wednesday, June 14, at 6:30 P.M., at the Hotel Commodore, it was announced by Abraham Mazer, chairman of the division. Enthusiastic cooperation of the leading members of the industry has been secured, assuring success for the affair and indicating the high regard with which the guest of honor is held, Mr. Mazer stated.

"Our dinner will be a tangible expression of our esteem for Mr. Gilman," he declared. "For years he has led our work in organizing support on behalf of every worthy communal endeavor and has been a devoted leader in improving conditions within the industry."

The affair will also serve notice that the industry has been profoundly affected by events abroad and is determined to act in unison in alleviating the distress and terror of the refugees and other victims of persecution overseas, Mr. Mazer indicated.

"We are today at one of the great turning points in history," he said, "If we are to move speedily, effectively and humanely, all of us who enjoy the good fortune of living in a tolerant and generous democracy must rally to the United Jewish Appeal, in which are merged the efforts of the major organizations dealing with Jewish refugees—the Joint Distribution Committee, the United Palestine Appeal and the National Coordinating Committee.

"In such a cause no man has the right to stand aside."

The United Jewish Appeal is the largest effort ever conducted in New York on behalf of refugees and victims of oppression. Funds raised in its campaign will be expended by the three participating organizations for relief, retraining and resettlement.

"This is not a campaign to bring refugees to the United States," Mr. Mazer said. "Under our immigration laws, only a very small fraction of the refugees in Europe can hope to gain entrance to this country. Our funds will go to providing first aid to the refugees in Europe and to aid them in finding havens in sparsely settled parts of the globe."

A committee of leading members of the industry is now in process of formation to sponsor the testimonial dinner to Mr. Gilman and to supervise the arrangements.

Kalamazoo Valley TAPPI Meets

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met at the Park-American Hotel, Kalamazoo, Mich. on Thursday evening, May 4, 1939. Paul de Guehery presided as chairman.

A. S. Cosler of Bauer Brothers Machine Co., Springfield, Ohio talked on "Fiber Classification and Disc Refiners," illustrating with lantern slides.

The nominating committee presented the following slate to be voted on at the June 1st meeting at the Gull Lake Country Club: Chairman W. A. Kirkpatrick II, Allied Paper Mills; Vice Chairman—W. K. Kidder, Bryant Paper Company; Secretary—Ray Olson, Bryant Paper Company; Treasurer—E. F. Whittington, Rex Paper Company; Executive Committee — Wm. Hathaway, Kalamazoo Vegetable Parchment Company; C. L. Bachelder, Hercules Powder Company; and Paul de Guehery, Michigan Paper Company.

Those present were: E. G. Milham, H. F. Heller, J. W. Burke, F. K. Shankweiler, Henry Reeves, R. T. Mashburn, J. R. Stephenson, N. E. Frank, R. L. Barton, M. S. Fogerty, G. C. Schmid, Paul DeGuehery, M. R. Wilkins, W. J. White, Al Perlick, Frank Libby, W. F. Hathaway, Wm. Kottman, John Bauman, E. F. Whittington, H. C. Bradford, W. S. Taylor, E. B. Taylor, H. B. Johnston, W. A. Kirkpatrick II, F. R. Hamilton, R. D. Freeman, J. A. Heenan, A. L. Sherwood, C. H. Champion, J. L. Sullivan, F. L. Sleeser, Jack Dickson, M. J. Roberts.

C. A. Wagner and H. A. Edlund Honored

The board of governors of the Tissue Association met at the Roosevelt Hotel, New York City, May 1 to tender a luncheon in honor of past president, C. Alfred Wagner, and to Harold A. Edlund, who retires as secretary of the association to go into private industry.

President George Stuhr, on behalf of the board of governors and the industry, presented to C. Alfred Wagner, a beautifully engraved scroll signed by the board of governors in appreciation of his unselfish services to the industry as its past president, and to Harold A. Edlund, retiring secretary, who leaves the association to go into private industry, a specially engraved gold wrist watch as a token of the esteem in which Mr. Edlund is held by the tissue industry.

At the same meeting, Ross A. Fife was formally elected secretary of the Tissue Association.

Those present were—George Stuhr, president, Southern Kraft Corporation; B. I. Reider, Victoria Paper Mills; J. M. Conway, Hoberg Paper Mills; Wayne A. Brown, National Paper Products Company, Division of Crown Zellerbach Corporation; Dwight G. W. Hollister, A.P.W. Paper Company; A. B. Hansen, Northern Paper Mills; B. F. Picola, Gotham Tissue Corp.; R. B. Stevens, Stevens & Thompson Paper Company, Greenwich, N. Y.; Morris Housen, Erving Paper Mills; W. E. McIntyre, McIntyre Brothers Paper Company.

First Paper Mill at Fort Edward Burned

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., May 15, 1939—The first paper mill built here was destroyed by fire this week with a loss of several thousand dollars to its owners, the International Paper Company, which used it for the storage of old paper-making machinery and other equipment. The blaze was fought for several hours before being extinguished. The mill was built in 1848 and originally made paper from straw and later from rags. The last straw paper made at the mill was about 1888 and with the acquisition of the Fort Edward Paper Company by International in 1892 it was converted into a wrapper mill.

Boston Paper Men To Have Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 15, 1939—The outing of the Boston Paper Trade Association is to be held at the Charles River Country Club, Newton, Mass., Monday, June 5, and that of the New England Paper Merchants Association at the Farmington Country Club, Hartford, Conn., June 28.

CONGRESSIONAL COMMITTEE OPENS PAPER BIDS

(Continued from page 19)

Machine-Finish Book End Paper

No. 15—36,000 lbs., for waste leaves; flat, cut 25x38—160; the grain to run the 38-inch way.

Perkins-Goodwin Co.	4.46c
Butler Paper Co.	5.21c
Whitaker Paper Co.	4.885c
Walker-Goulard-Plehn Co.	5.27c
Stanford Paper Co.	5.24c
R. P. Andrews Paper Co.	4.49c
Barton, Duer & Koch Paper Co.	5.24c
Paper Corp. of U. S.	5.37c
Old Dominion Paper Co.	5.059c

Offset Book

No. 16—400,000 lbs., 25x38—120; flat, cut 24x38, 25x38, 26x32, 28x40, and 38x48 ins.; grain as ordered.

John F. Post, Inc.	5.62c
Perkins-Goodwin Co.	4.69c
Whitaker Paper Co.	4.684c
Stanford Paper Co.	5.20c
R. P. Andrews Paper Co.	5.19c
Frank Parsons Paper Co.	4.806c
Barton, Duer & Koch Paper Co.	4.97c
Marquette Paper Co.	5.06c
Paper Corp. of U. S.	5.49c
Aetna Paper Co.	5.77c
Old Dominion Paper Co.	5.649c

Antique Book

No. 17—400,000 lbs., 25x38—100 and 120; flat, cut 33x43, and 38x50 ins.

John F. Post, Inc.	5.38c
Perkins-Goodwin Co.	4.38c
Mudge Paper Co.	4.484c
Cauthorne Paper Co.	4.24c
Whitaker Paper Co.	4.33c
Fitchburg Paper Co.	4.65c
Stanford Paper Co.	4.66c
R. P. Andrews Paper Co.	4.19c
Frank Parsons Paper Co.	4.336c
Barton, Duer & Koch Paper Co.	5.38c
Paper Corp. of U. S.	5.15c
Aetna Paper Co.	5.38c
Old Dominion Paper Co.	4.4049c

Lightweight Machine-Finish Book

No. 18—40,000 lbs., 25x38—60; flat, cut 32x48 and 38x48 ins.

Stanford Paper Co.	5.58c
Barton, Duer & Koch Paper Co.	5.82c
Paper Corp. of U. S.	5.62c

50 Per Cent Rag Lightweight Machine-Finish Book

No. 19—40,000 lbs., 25x38—60; flat, cut 32x48 and 38x48 ins.

Paper Corp. of U. S.	11.78c
Old Dominion Paper Co.	11.99c

50 Per Cent Rag Antique Book

No. 20—150,000 lbs., 25x38—80; flat, cut 32x48 and 38x48 ins.

Whitaker Paper Co.	9.64c
Paper Corp. of U. S.	8.38c
Aetna Paper Co.	7.487c
Old Dominion Paper Co.	7.244c

No. 21—60,000 lbs., 25x38—80; flat, cut 22¾x31½, 29x41 and 31½x45½ ins.

Whitaker Paper Co.	9.64c
Paper Corp. of U. S.	8.38c
Aetna Paper Co.	7.487c
Old Dominion Paper Co.	7.244c

No. 22—120,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 42 ins.

Whitaker Paper Co.	9.19c
Paper Corp. of U. S.	8.24c
Aetna Paper Co.	7.367c
Old Dominion Paper Co.	7.094c

75 Per Cent Rag Laid Antique Book

No. 23—20,000 lbs., 25x38—140; flat, cut 24x38 and 29x41 ins.; the laid marks to run the 24-inch and 29-inch direction of the sheet; the grain and chain marks to run lengthwise of the sheet.

Whitaker Paper Co.	11.09c
Walker-Goulard-Plehn Co.	10.10c
R. P. Andrews Paper Co.	9.93c
Barton, Duer & Koch Paper Co.	12.87c
Paper Corp. of U. S.	10.61c
Aetna Paper Co.	9.627c

100 Per Cent Rag Antique Book

No. 24—5,000 lbs., 25x38—90; flat, cut 24x38 and 38x48 ins.; the grain to run lengthwise of the sheet. Min. order 5,000 lbs.

Whitaker Paper Co.	19.09c
R. P. Andrews Paper Co.	14.83c
Lee Paper Co.	15.36c
Barton, Duer & Koch Paper Co.	16.33c

No. 25—15,000 lbs., 25x38—140; flat, cut 24x38 and 38x48 ins.; the grain to run lengthwise of the sheet. Min. order 10,000 lbs.

Whitaker Paper Co.	19.09c
R. P. Andrews Paper Co.	14.03c
Lee Paper Co.	15.36c
Barton, Duer & Koch Paper Co.	15.84c

Supercalendered Book

No. 26—700,000 lbs., 25x38—90; flat, cut 31¼x45½, 32x48, 34x44, 38x48 and 39x50 ins.

Perkins-Goodwin Co.	4.64c
Whitaker Paper Co.	4.89c
Stanford Paper Co.	4.91c
R. P. Andrews Paper Co.	4.57c
Frank Parsons Paper Co.	4.403c
Barton, Duer & Koch Paper Co.	4.82c
Marquette Paper Co.	4.74c

No. 27—300,000 lbs., 25x38—100; flat cut 38x48 ins.

Perkins-Goodwin Co.	4.43c
Cauthorne Paper Co.	4.87c
Whitaker Paper Co.	4.72c
Stanford Paper Co.	4.91c
R. P. Andrews Paper Co.	4.49c
Frank Parsons Paper Co.	4.447c
Barton, Duer & Koch Paper Co.	4.82c
Marquette Paper Co.	4.70c

No. 28—150,000 lbs., 25x38—120 and 140; flat, cut 35x45, 38x48, 38x50, and 38x51 ins.

Perkins-Goodwin Co.	4.46c
Cauthorne Paper Co.	4.87c
Whitaker Paper Co.	4.69c
Stanford Paper Co.	4.91c
R. P. Andrews Paper Co.	4.43c
Frank Parsons Paper Co.	4.46c
Barton, Duer & Koch Paper Co.	4.89c
Marquette Paper Co.	4.74c

No. 29—80,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide (3-inch fiber cores).

Perkins-Goodwin Co.	4.32c
Whitaker Paper Co.	4.68c
Stanford Paper Co.	4.56c
Frank Parsons Paper Co.	4.12c
Barton, Duer & Koch Paper Co.	4.52c
Marquette Paper Co.	4.42c
Paper Corp. of U. S.	4.51c

No. 30—600,000 lbs., 25x38—100; rolls, 38 ins. wide (3-inch fiber cores).

Perkins-Goodwin Co.	4.09c
Whitaker Paper Co.	4.48c
Stanford Paper Co.	4.56c
R. P. Andrews Paper Co.	3.93c
Frank Parsons Paper Co.	4.064c
Barton, Duer & Koch Paper Co.	4.50c
Marquette Paper Co.	4.22c

No. 31—600,000 lbs., 25x38—100; rolls, 38 ins. wide (3-inch fiber cores).

Perkins-Goodwin Co.	4.09c
Whitaker Paper Co.	4.48c
Stanford Paper Co.	4.56c
R. P. Andrews Paper Co.	3.93c
Frank Parsons Paper Co.	4.064c
Barton, Duer & Koch Paper Co.	4.50c
Marquette Paper Co.	4.22c

Coated Book

No. 36—500,000 lbs., 25x38—140 and 160; flat, cut 24x32, 24x38, 29x41, 38x48, 38x50 and 39x51 ins.; the grain to run lengthwise of the sheet.

John F. Post, Inc.	6.20c
Butler Paper Co.	5.91c
Whitaker Paper Co.	5.81c
Stanford Paper Co.	6.09c
R. P. Andrews Paper Co.	6.09c
Marquette Paper Co.	5.93c

50 Per Cent Rag Coated Book

No. 37—20,000 lbs., 25x38—140 and 160; flat, 38x48 ins.; the grain to run lengthwise of the sheet.

Walker-Goulard-Plehn Co.	11.00c
Stanford Paper Co.	10.90c
Virginia Paper Co.	11.40c
Barton, Duer & Koch Paper Co.	11.16c
Graham Paper Co.	11.34c

50 Per Cent Rag Machine-Finish Lithograph

No. 40—30,000 lbs., 25x38—160; flat, cut 26x38 ins., the grain to run lengthwise of the sheet.

Whitaker Paper Co.	10.83c
R. P. Andrews Paper Co.	9.96c
Graham Paper Co.	10.50c
Aetna Paper Co.	8.847c

Mimeograph, White and Colored

No. 43—900,000 lbs., white, Nos. 40 and 48; flat, cut 24½x30½, 24½x32, 24½x38, 26x42½, and 28½x34½ ins.; the grain to run lengthwise of the sheet.

Perkins-Goodwin Co.	4.34c
Cauthorne Paper Co.	4.21c
Whitaker Paper Co.	4.345c
Stanford Paper Co.	4.53c
R. P. Andrews Paper Co.	4.19c
Barton, Duer & Koch Paper Co.	4.38c
Marquette Paper Co.	4.93c
Graham Paper Co.	6.62c
Paper Corp. of U. S.	4.79c
Old Dominion Paper Co.	4.5449c

No. 44—120,000 lbs., blue, buff, green, pink and yellow, No. 40; flat, cut 24½x30½, 24½x32, 24½x38 and 26x42½ ins.; the grain to run lengthwise of the sheet. Min. order, one color, 10,000 lbs.

Cauthorne Paper Co.	4.98c
Whitaker Paper Co.	6.07c
Stanford Paper Co.	5.28c
Barton, Duer & Koch Paper Co.	5.51c
Graham Paper Co.	6.99c

25 Per Cent Rag Mimeograph

No. 47—3,000,000 lbs., Nos. 40 and 48; flat, cut 24½x30½, 24½x32, 24½x38, 26x42½, and 28½x34½ ins.; the grain to run lengthwise of the sheet.

Stanford Paper Co.	5.98c
Barton, Duer & Koch Paper Co.	5.25c
Paper Corp. of U. S.	6.125c
Aetna Paper Co.	5.087c
Old Dominion Paper Co.	5.3198c

Blue U S M O Safety Writing

No. 51—400,000 lbs., No. 32; rolls, 22 ins. wide, 24 ins. in diameter (3-inch fiber cores).

George LaMonte & Sons	10.39c
R. P. Andrews Paper Co.	10.17c

U S M O Writing, White and Blue

No. 52—8,000 lbs., No. 32; rolls, 8½ inches wide, 24 ins. in diameter (3-inch fiber cores). Min. order, either color, 4,000 lbs.

R. P. Andrews Paper Co.	(White)	9.25c
	(Blue)	9.80c

Safety Writing, Colored

No. 53—4,000 lbs., blue, gray, green, pink salmon, and yellow, No. 40; flat,

cut 17x28, 21x32, and 22x34 ins. Min. order, one color, 2,000 lbs.

Whitaker Paper Co.	11.40c
Stanford Paper Co.	10.90c
R. P. Andrews Paper Co.	12.35c
Mathers Lamm Paper Co.	12.10c

Sulphite Writing, White and Colored

No. 54—250,000 lbs., white, No. 26; flat, cut 32x42 ins.

Perkins-Goodwin Co.	5.24c
Whitaker Paper Co.	5.79c
R. P. Andrews Paper Co.	5.98c
Barton, Duer & Koch Paper Co.	5.47c
Marquette Paper Co.	5.47c
Graham Paper Co.	6.12c
Paper Corp. of U. S.	6.28c
Aetna Paper Co.	6.487c
Old Dominion Paper Co.	5.2447c

No. 55—2,500,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 34 ins.

Perkins-Goodwin Co.	4.43c
Cauthorne Paper Co.	5.69c
Whitaker Paper Co.	4.674c
Stanford Paper Co.	5.20c
R. P. Andrews Paper Co.	5.73c
Barton, Duer & Koch Paper Co.	4.51c
Marquette Paper Co.	5.05c
Graham Paper Co.	5.88c
Paper Corp. of U. S.	5.10c
Aetna Paper Co.	5.487c
Old Dominion Paper Co.	4.59499c

No. 56—3,000,000 lbs., white, Nos. 40 and 48; flat, cut any size, min. width 21 ins., max. width 41 ins.

Perkins-Goodwin Co.	4.43c
Butler Paper Co.	5.40c
Cauthorne Paper Co.	5.54c
Whitaker Paper Co.	4.474c
Stanford Paper Co.	5.05c
R. P. Andrews Paper Co.	5.47c
Barton, Duer & Koch Paper Co.	4.47c
Marquette Paper Co.	4.90c
Graham Paper Co.	5.62c
Paper Corp. of U. S.	4.94c
Aetna Paper Co.	5.487c
Old Dominion Paper Co.	4.49499c

No. 57—60,000 lbs., white, No. 26; rolls, min. width 16 ins., max. width 38 ins. (3-inch fiber cores).

Perkins-Goodwin Co.	4.89c
Cauthorne Paper Co.	5.94c
Whitaker Paper Co.	5.39c
R. P. Andrews Paper Co.	5.23c
Barton, Duer & Koch Paper Co.	5.32c
Marquette Paper Co.	5.45c
Graham Paper Co.	5.35c
Paper Corp. of U. S.	5.56c
Aetna Paper Co.	6.237c
Old Dominion Paper Co.	5.239c

No. 58—800,000 lbs., white, No. 32; rolls, min. width 16 ins., max. width 38 ins. (3-inch fiber cores).

Perkins-Goodwin Co.	4.08c
Butler Paper Co.	4.82c
Cauthorne Paper Co.	4.0479c
Whitaker Paper Co.	4.19c
R. P. Andrews Paper Co.	4.91c
Barton, Duer & Koch Paper Co.	4.37c
Marquette Paper Co.	4.60c
Graham Paper Co.	5.02c
Paper Corp. of U. S.	4.66c
Aetna Paper Co.	5.237c
Old Dominion Paper Co.	4.2457c

No. 59—40,000 lbs., white, Nos. 40 and 48; rolls, min. width 16 ins., max width 38 ins. (3-inch fiber cores).

Perkins-Goodwin Co.	4.14c
Butler Paper Co.	4.82c
Cauthorne Paper Co.	4.088c
Whitaker Paper Co.	4.19c
R. P. Andrews Paper Co.	4.93c
Barton, Duer & Koch Paper Co.	4.41c
Marquette Paper Co.	4.75c
Graham Paper Co.	5.02c
Paper Corp. of U. S.	4.66c
Aetna Paper Co.	5.237c
Old Dominion Paper Co.	4.2457c

No. 60—30,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 26; flat, cut any size, min. width 21 ins., max. width 34 ins. Min. order, one color, 5,000 lbs.

Butler Paper Co.	6.14c
R. P. Andrews Paper Co.	6.23c
Barton Duer & Koch Paper Co.	6.75c
Marquette Paper Co.	6.85c
Graham Paper Co.	6.27c
Aetna Paper Co.	7.217c
Old Dominion Paper Co.	6.499c

No. 61—1,500,000 lbs., blue, buff, cherry, green, pink, salmon and yellow Nos. 32 and 40; flat, cut any size, min. width 21 ins., max. width 34 ins. Min. order, one color, 10,000 lbs.

Butler Paper Co.	5.43c
Cauthorne Paper Co.	5.3298c
Stanford Paper Co.	5.70c
R. P. Andrews Paper Co.	5.43c
Barton Duer & Koch Paper Co.	5.15c
Marquette Paper Co.	5.38c
Graham Paper Co.	5.59c
Paper Corp of U. S.	5.59c
Aetna Paper Co.	6.217c
Old Dominion Paper Co.	5.14479c

100 Per Cent Rag White Writing

No. 63—2,500 lbs., No. 56; flat, cut 21x32 ins. Min. order 2,500 lbs.

Stanford Paper Co.	18.50c
Barton Duer & Koch Paper Co.	17.90c

Lithograph-Finish Map

No. 64—10,000 lbs., Nos. 32 and 40; flat, cut 24x38, 30x40, 32x48, 36x52, and 38x48 ins. Min. order, one substance, 5,000 lbs.

Whitaker Paper Co.	6.71c

50 Per Cent Rag Lithograph-Finish Map

No. 65—80,000 lbs., Nos. 40, 48 and 56; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Baxter Paper Co.	9.68c
Walker-Goulard-Plehn Co.	11.40c
Stanford Paper Co.	9.54c
R. P. Andrews Paper Co.	13.51c
Barton, Duer & Koch Paper Co.	9.85c
Mathers-Lamm Paper Co.	9.60c
Graham Paper Co.	9.54c
Aetna Paper Co.	10.027c

75 Per Cent Rag Lithograph-Finish Map

No. 66—100,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Mudge Paper Co.	11.36c
Stanford Paper Co.	11.61c
R. P. Andrews Paper Co.	11.73c
Virginia Paper Co.	11.70c
Barton, Duer & Koch Paper Co.	11.43c
Graham Paper Co.	11.61c
Aetna Paper Co.	11.917c

No. 67—100,000 lbs., Nos. 48 and 56; flat, cut any size, min. width 30 ins., max. width 48 ins.; the grain to run lengthwise of the sheet. Min. order, one substance, 5,000 lbs.

Mudge Paper Co.	11.16c
Walker-Goulard-Plehn Co.	11.90c
R. P. Andrews Paper Co.	11.23c
Barton, Duer & Koch Paper Co.	11.23c
Graham Paper Co.	11.39c
Aetna Paper Co.	11.827c

100 Per Cent Rag White Chart, Lithograph-Finish

No. 69—200,000 lbs., No. 96; flat, cut any size, min. width 22 ins., max width 46 ins.; packed in cases of 1,000 sheets each; the grain to run lengthwise of the sheet unless otherwise specified.

Stanford Paper Co.	16.09c
R. P. Andrews Paper Co.	16.57c
Frank Parsons Paper Co.	17.64c
Lee Paper Co.	18.16c
Barton, Duer & Koch Paper Co.	15.73c
Graham Paper Co.	18.50c

Sulphite Manifold, White and Colored

No. 70—160,000 lbs., white, No. 18; flat, cut 21x32, 22x34, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size.

Butler Paper Co.	6.584c
Import Paper Co.	7.00c
Whitaker Paper Co.	7.10c
Stanford Paper Co.	14.00c
R. P. Andrews Paper Co.	6.97c
Marquette Paper Co.	6.89c
Graham Paper Co.	7.40c
Paper Corp. of U. S.	7.18c

No. 71—80,000 lbs., blue, buff, green, pink, salmon and yellow, No. 18; flat, cut 21x32, 22x34, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 5,000 lbs.

Butler Paper Co.	7.38c
Import Paper Co.	7.75c
Whitaker Paper Co.	8.10c
Stanford Paper Co.	15.00c
R. P. Andrews Paper Co.	7.47c
Graham Paper Co.	8.15c
Paper Corp. of U. S.	7.92c

50 Per Cent Rag Manifold, White and Colored

No. 73—150,000 lbs., white, No. 14; flat, cut 21x32, 22x34, 28x34 and 38x48 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order 5,000 lbs.

R. P. Andrews Paper Co.	14.57c
Barton, Duer & Koch Paper Co.	14.59c
Marquette Paper Co.	14.48c

No. 74—600,000 lbs., white, No. 18; flat, cut 21x32, 22x34, 24x38 and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size.

Butler Paper Co.	10.94c
Stanford Paper Co. (300,000 lbs.)	10.90c
(Balance)	11.75c
Lee Paper Co. (200,000 lbs.)	11.439c
(Balance)	13.10c
Barton, Duer & Koch Paper Co.	
(300,000 lbs.)	10.97c
(300,000 lbs.)	11.11c
Marquette Paper Co.	13.00c
Graham Paper Co.	13.95c
Paper Corp. of U. S.	12.98c

No. 75—20,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 14; flat, cut 21x32, 22x34, and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 3,000 lbs.

R. P. Andrews Paper Co.	19.35c
Barton, Duer & Koch Paper Co.	17.00c
Marquette Paper Co.	16.93c

No. 76—120,000 lbs., blue, buff, cherry, green, pink, salmon and yellow. No. 18; flat, cut 21x32, 22x34, 24x38 and 28x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 5,000 lbs.

Stanford Paper Co.	12.25c
Lee Paper Co.	12.05c
Barton, Duer & Koch Paper Co.	11.95c
Marquette Paper Co.	14.00c
Graham Paper Co.	14.85c

100 Per Cent Rag White Manifold

No. 78—5,000 lbs., No. 14; flat, cut 17x28, 19x24, 21x32, and 22x34 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, 5,000 lbs.

Whitaker Paper Co.	27.54c
R. P. Andrews Paper Co.	25.43c
Barton, Duer & Koch Paper Co.	24.85c
Old Dominion Paper Co.	25.79c

No. 79—30,000 lbs., No. 18; flat, cut 17x28, 19x24. 21x32 and 22x34 ins.; the grain to run the 21-inch way on the 21x32 ins. size. Min. order 5,000 lbs.

Butler Paper Co.	20.95c
Whitaker Paper Co.	24.50c
R. P. Andrews Paper Co.	22.95c
Lee Paper Co.	22.87c
Barton Duer & Koch Paper Co.	20.40c
Old Dominion Paper Co.	20.379c

50 Per Cent Rag White Glazed Manifold

No. 83—150,000 lbs., No. 16; flat cut 19x24 and 21x32 ins.; the grain to run

the 21-inch way on the 21x32-inch size. Min. order 20,000 lbs.

R. P. Andrews Paper Co. 14.35c
Lee Paper Co. 17.99c
Barton, Duer & Koch Paper Co. 14.00c

Sulphite White Bond

No. 102—600,000 lbs., No. 40; flat, cut any size, min. width 21 ins.; max. width 37 ins.

Butler Paper Co. 5.71c
Whitaker Paper Co. 5.86c
Stanford Paper Co. 5.29c
R. P. Andrews Paper Co. 5.75c
Barton, Duer & Koch Paper Co. 5.19c
Marquette Paper Co. 5.25c
Graham Paper Co. 5.88c
Paper Corp. of U. S. 5.39c
Aetna Paper Co. 5.487c
Old Dominion Paper Co. 5.2347c

25 Per Cent Rag Bond, White and Colored

No. 109—350,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins.; max. width 34 ins.

R. P. Andrews Paper Co. 8.83c
Barton, Duer & Koch Paper Co. 9.90c
Graham Paper Co. 10.90c
Aetna Paper Co. 8.787c

No. 110—500,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 34 ins.

R. P. Andrews Paper Co. 7.33c
Barton, Duer & Koch Paper Co. 8.05c
Aetna Paper Co. 7.377c

No. 111—1,300,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 34 ins.

Barton, Duer & Koch Paper Co. 8.05c
Aetna Paper Co. 6.917c

No. 112—1,300,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 34 ins.

Butler Paper Co. 7.01c
Barton, Duer & Koch Paper Co. 8.25c
Aetna Paper Co. 6.917c

No. 113—400,000 lbs., white, No. 48; flat, cut any size, min. width 21 ins., max. width 34 ins.

Baxter Paper Co. 7.08c
L. Hyman & Sons 7.48c
Barton, Duer & Koch Paper Co. 8.00c
Mathers-Lamm Paper Co. 7.40c
Aetna Paper Co. 6.917c

No. 114—250,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 26; flat, cut any size, min. width 21 ins., max. width 34 ins. Min. order, one color, 5,000 lbs.

Baxter Paper Co. 9.28c
Stanford Paper Co. 9.16c
Barton, Duer & Koch Paper Co. 9.20c
Aetna Paper Co. 9.077c

No. 115—400,000 lbs., blue, buff, cherry, green, pink, salmon and yellow. No. 32; flat, cut any size, min. width 21 ins., max. width 34 ins.

Baxter Paper Co. 7.70c
Stanford Paper Co. 7.58c
Barton, Duer & Koch Paper Co. 8.30c
Aetna Paper Co. 7.577c

No. 116—400,000 lbs., blue, buff, cherry, green, pink, salmon and yellow No. 40; flat, cut any size min. width 21 ins., max. width 34 ins.

Baxter Paper Co. 7.26c
Stanford Paper Co. 7.58c
Barton, Duer & Koch Paper Co. 8.15c
Aetna Paper Co. 7.207c

No. 117—80,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 48; flat, cut any size, min. width 21 ins., max. width 34 ins.

Baxter Paper Co. 7.34c
Stanford Paper Co. 7.58c
Barton, Duer & Koch Paper Co. 8.15c
Aetna Paper Co. 7.207c

50 Per Cent Rag Bond, White and Colored

No. 120—100,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins., max. width 34 ins.

R. P. Andrews Paper Co. 10.83c
Barton, Duer & Koch Paper Co. 10.90c
Graham Paper Co. 11.60c
Aetna Paper Co. 10.747c

No. 121—800,000 lbs., white, Nos. 32 and 40; flat, cut any size, min. width 21 ins., max. width 34 ins.

R. P. Andrews Paper Co. 7.93c
Barton, Duer & Koch Paper Co. 9.05c
Graham Paper Co. 8.479c
Aetna Paper Co. 8.117c

No. 122—130,000 lbs., white, No. 48; flat, cut any size, min. width 21 ins., max. width 34 ins.

R. P. Andrews Paper Co. 7.93c
Virginia Paper Co. 8.56c
Barton, Duer & Koch Paper Co. 9.00c
Graham Paper Co. 10.85c
Aetna Paper Co. 8.327c

No. 123—10,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, Nos. 32 and 40; flat, cut any size, min. width 21 ins., max. width 34 ins. Min. order, one color, one substance, 2,500 lbs.

Barton, Duer & Koch Paper Co. 10.25c
Graham Paper Co. 11.50c
Aetna Paper Co. 9.477c

75 Per Cent Rag White Bond

No. 125—2,500 lbs., No. 26; flat, cut any size, min. width 21 ins., max. width 32 ins. Min. order. 2,500 lbs.

Stanford Paper Co. 18.75c
Barton, Duer & Koch Paper Co. 23.00c
Graham Paper Co. 17.75c

No. 126—2,500 lbs., Nos. 32, 40, and 48; flat, cut any size, min. width 21 ins., max. width 32 ins. Min. order, one substance, 2,500 lbs.

Stanford Paper Co. 16.50c
Barton, Duer & Koch Paper Co. 19.00c
Graham Paper Co. 16.50c

100 Per Cent Rag White Bond

No. 128—6,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 16 ins., max. width 32 ins. Min. order, one substance, 2,000 lbs.

Stanford Paper Co. 17.95c
R. P. Andrews Paper Co. 21.73c
Frank Parsons Paper Co. 19.50c
Barton, Duer & Koch Paper Co. 17.90c

No. 129—5,000 lbs., No. 48; flat, cut any size, min. width 16 ins., max. width 32 ins. Min. order, 2,000 lbs.

Stanford Paper Co. 18.00c
R. P. Andrews Paper Co. 20.43c
Frank Parsons Paper Co. 19.50c
Barton, Duer & Koch Paper Co. 17.90c

100 Per Cent Rag Declaration Bond

No. 140—4,000 lbs., Nos. 32 and 40; flat, cut 17x22 and 22x25½ ins. Min. order, one substance, 3,000 lbs.

Stanford Paper Co. 24.00c
Graham Paper Co. 22.00c

100 Per Cent Rag Parchment Deed

No. 141—2,000 lbs., No. 64; flat, cut 33x34 ins. Min. order, 2,000 lbs.

Stanford Paper Co. 18.25c
R. P. Andrews Paper Co. 22.73c
Barton, Duer & Koch Paper Co. 17.90c

Sulphite White Ledger

No. 151—50,000 lbs., Nos. 56 and 64; flat, cut any size, min. width 17 ins., max. width 32 ins. Min. order, one substance, 10,000 lbs.

Butler Paper Co. 5.62c
Import Paper Co. 7.28c
Whitaker Paper Co. 5.60c
Stanford Paper Co. 5.69c
R. P. Andrews Paper Co. 5.61c
Barton, Duer & Koch Paper Co... 5.55c
Marquette Paper Co. 5.59c
Graham Paper Co. 5.74c
Paper Corp. of U. S. 5.85c
Aetna Paper Co. 6.457c
Old Dominion Paper Co. 5.649c

No. 152—60,000 lbs., No. 80; flat, cut any size, min. width 17 ins., max. width 32 ins.

Butler Paper Co. 5.62c
Import Paper Co. 7.28c
Whitaker Paper Co. 5.60c
Stanford Paper Co. 5.69c
R. P. Andrews Paper Co. 5.61c
Barton, Duer & Koch Paper Co. 5.55c
Marquette Paper Co. 5.59c
Graham Paper Co. 5.74c
Paper Corp. of U. S. 5.85c
Aetna Paper Co. 6.457c
Old Dominion Paper Co. 5.649c

25 Per Cent Rag Ledger, White and Colored

No. 154—60,000 lbs., white, Nos. 48 and 56; flat, cut 20x28, 21x32, 24x38, 28x29 and 28x34 ins. Min. order, one substance, 5,000 lbs.

Baxter Paper Co. 7.58c
L. Hyman & Sons 7.83c
Frank Parsons Paper Co. 10.50c
Barton, Duer & Koch Paper Co. 8.60c
Graham Paper Co. 7.55c
Paper Corp. of U. S. 8.51c
Aetna Paper Co. 7.387c

No. 155—5,000 lbs., white, No. 64; flat, cut 21x32 and 23x36 ins. Min. order, 5,000 lbs.

Baxter Paper Co. 8.38c
L. Hyman & Sons 8.22c
Frank Parsons Paper Co. 10.50c
Barton, Duer & Koch Paper Co. 8.90c
Mathers-Lamm Paper Co. 8.40c
Paper Corp. of U. S. 8.91c
Aetna Paper Co. 7.987c

No. 156—15,000 lbs., white, No. 72; flat, cut 20x28, 21x32, 24x38, and 28x34 ins. Min. order, 5,000 lbs.

Baxter Paper Co. 8.40c
L. Hyman & Sons 8.22c
Frank Parsons Paper Co. 10.50c
Barton, Duer & Koch Paper Co. 8.85c
Mathers-Lamm Paper Co. 8.40c
Paper Corp. of U. S. 8.91c
Aetna Paper Co. 7.987c

No. 157—40,000 lbs., blue, buff, green, pink, salmon and yellow, Nos. 56, 64, and 72; flat, cut 21x32, 23x36, 24x38, 26x36, and 28x34 ins. Min. order, one substance, one color, 3,000 lbs.

Baxter Paper Co. 8.84c
Barton, Duer & Koch Paper Co. 8.95c
Mathers-Lamm Paper Co. 9.10c
Graham Paper Co. 10.65c
Aetna Paper Co. 8.347c

50 Per Cent Rag Ledger, White and Colored

No. 160—120,000 lbs., white, Nos. 48 and 56; flat, cut 18½x36, 18½x40¼, 20x28, 21x32, 24x38, 28x29, and 28x34 ins. Min. order, one substance, 10,000 lbs.

Baxter Paper Co. 8.72c
Butler Paper Co. 8.66c
L. Hyman & Sons 8.71c
Stanford Paper Co. 8.66c
Barton, Duer & Koch Paper Co. 9.15c
Graham Paper Co. 11.05c
Paper Corp. of U. S. 9.60c
Aetna Paper Co. 8.697c

No. 161—40,000 lbs., white, No. 64; flat, cut 21x32 and 23x36 ins. Min. order, 10,000 lbs.

Baxter Paper Co. 8.88c
Butler Paper Co. 8.66c
L. Hyman & Sons 8.71c
Stanford Paper Co. 8.66c
Barton, Duer & Koch Paper Co. 9.15c
Graham Paper Co. 11.05c
Paper Corp. of U. S. 9.60c
Aetna Paper Co. 8.697c

No. 162—120,000 lbs., white, Nos. 72 and 80; flat, cut 20x28, 21x32, 24x38, and 28x34 and 35½x46½ ins.; on size

35½x46½ the grain to run crosswise of the sheet. Min. order, 10,000 lbs.

Baxter Paper Co.	8.72c
Barton, Duer & Koch Paper Co.	8.77c
Paper Corp. of U. S.	9.60c
Aetna Paper Co.	9.057c

No. 163—30,000 lbs., white, No. 88; flat, cut 21x32½ ins. Min. order, 10,000 lbs.

Baxter Paper Co.	8.96c
L. Hyman & Sons	9.19c
Barton, Duer & Koch Paper Co.	9.15c
Paper Corp. of U. S.	10.00c
Aetna Paper Co.	8.917c

No. 164—100,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, Nos. 56, 64, and 72; flat cut 18½x36, 18½x40¼, 19x24, 21x32, 23x36, and 28x34 ins. Min. order, one substance, one color, 5,000 lbs.

Baxter Paper Co.	9.40c
L. Hyman & Sons	9.19c
Barton, Duer & Koch Paper Co.	9.30c
Graham Paper Co.	11.50c
Aetna Paper Co.	9.207c

No. 165—20,000 lbs., blue, buff, cherry, fawn, green, pink, salmon and yellow. No. 88; flat, cut 21x32½ ins. Min. order, one color, 5,000 lbs.

Baxter Paper Co.	9.68c
L. Hyman & Sons	9.48c
Barton, Duer & Koch Paper Co.	9.30c
Mathers-Lamm Paper Co.	9.65c
Graham Paper Co.	11.95c
Aetna Paper Co.	9.207c

75 Per Cent Rag Ledger, White and Colored

No. 168—15,000 lbs., white, Nos. 48 and 56; flat, cut 21x32, 24x38, 28x29, and 28x34 ins. Min. order, one substance, 4,000 lbs.

Baxter Paper Co.	13.00c
Whitaker Paper Co.	14.24c
Frank Parsons Paper Co.	14.00c
Barton, Duer & Koch Paper Co.	12.63c
Aetna Paper Co.	13.047c

No. 169—10,000 lbs., white, No. 64; flat, cut 21x32, 23x36, 24x38, and 28x34 ins. Min. order, 5,000 lbs.

Baxter Paper Co.	12.78c
Whitaker Paper Co.	14.04c
Frank Parsons Paper Co.	14.00c
Barton, Duer & Koch Paper Co.	12.63c
Graham Paper Co.	15.40c
Aetna Paper Co.	13.047c

No. 170—20,000 lbs., white, Nos. 72 and 80; flat, cut 20x28, 21x32, 24x38, and 28x34 ins. Min. order, one substance, 5,000 lbs.

Baxter Paper Co.	12.78c
Whitaker Paper Co.	14.04c
Frank Parsons Paper Co.	14.00c
Barton, Duer & Koch Paper Co.	12.63c
Graham Paper Co.	15.40c
Aetna Paper Co.	13.047c

No. 171—8,000 lbs., white, No. 88; flat, cut 21x32½ ins. Min. order, 5,000 lbs.

Baxter Paper Co.	12.80c
Whitaker Paper Co.	14.04c
Frank Parsons Paper Co.	14.00c
Barton, Duer & Koch Paper Co.	12.63c
Graham Paper Co.	15.40c
Aetna Paper Co.	13 047c

No. 172—12,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, Nos. 56, 64, and 72; flat, cut 21x32, 23x36, 24x38, and 28x34 ins. Min. order, one substance, one color, 3,000 lbs.

Barton, Duer & Koch Paper Co.	13.45c
Graham Paper Co.	16.10c
Aetna Paper Co.	13.627c

No. 173—6,000 lbs., blue, buff, cherry, fawn, green, pink, salmon and yellow, No. 88; flat, cut 21x32½ ins. Min. order, one color, 4,000 lbs.

Barton, Duer & Koch Paper Co.	13.45c
Graham Paper Co.	16.20c

100 Per Cent Rag White Ledger

No. 176—6,000 lbs., No. 48; flat, cut 21x32, 22¾x31½, 23x36, 24x38, and 28x34 ins. Min. order, 4,000 lbs.

Whitaker Paper Co.	20.79c
Walker-Goulard-Plehn Co.	20.25c
Stanford Paper Co.	17.30c
R. P. Andrews Paper Co.	21.23c
Frank Parsons Paper Co.	18.24c
Barton, Duer & Koch Paper Co.	16.91c
Old Dominion Paper Co.	17.349c

No. 177—10,000 lbs., No. 56; flat, cut 20x28, 21x32, 23x36, 24x38, and 28x34 ins. Min. order 5,000 lbs.

Whitaker Paper Co.	20.79c
Walker-Goulard-Plehn Co.	20.25c
Stanford Paper Co.	17.20c
R. P. Andrews Paper Co.	21.23c
Frank Parsons Paper Co.	18.24c
Barton, Duer & Koch Paper Co.	16.91c
Old Dominion Paper Co.	17.349c

No. 178—20,000 lbs., No. 64; flat, cut 18½x42, 21x32, 23x36, and 28x34 ins. Min. order, 5,000 lbs.

Whitaker Paper Co.	20.79c
Walker-Goulard-Plehn Co.	20.25c
Stanford Paper Co.	17.00c
R. P. Andrews Paper Co.	21.23c
Frank Parsons Paper Co.	18.24c
Barton, Duer & Koch Paper Co.	16.91c
Old Dominion Paper Co.	17.349c

No. 179—5,000 lbs., No. 72; flat, cut 20x28, 21x32, 24x38, and 28x34 ins. Min. order, 5,000 lbs.

Whitaker Paper Co.	20.79c
Walker-Goulard-Plehn Co.	20.25c
Stanford Paper Co.	17.40c
R. P. Andrews Paper Co.	21.23c
Frank Parsons Paper Co.	18.24c
Barton, Duer & Koch Paper Co.	16.91c
Old Dominion Paper Co.	17.349c

No. 180—4,000 lbs., No. 80; flat, cut 21x32½ and 21x42 ins. Min. order, 4,000 lbs.

Whitaker Paper Co.	20.79c
Walker-Goulard-Plehn Co.	20.25c
Stanford Paper Co.	17.50c
R. P. Andrews Paper Co.	20.43c
Frank Parsons Paper Co.	18.24c
Barton, Duer & Koch Paper Co.	16.91c
Old Dominion Paper Co.	17.349c

No. 181—10,000 lbs., No. 88; flat, cut 20½x24¾, 21x32½ and 22¾x31½ ins. Min. order, 5,000 lbs.

Whitaker Paper Co.	20.79c
Walker-Goulard-Plehn Co.	20.25c
Stanford Paper Co.	17.50c
R. P. Andrews Paper Co.	20.43c
Frank Parsons Paper Co.	18.24c
Barton Duer & Koch Paper Co.	16.91c
Old Dominion Paper Co.	17.349c

Sulphite White Index

No. 184—300,000 lbs., 22½x28½—182 and 230; flat, cut 21x32½, 22½x28½, 24½x32½ and 32½x48½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.

Perkins-Goodwin Co.	5.90c
Import Paper Co.	6.55c
Cauthorne Paper Co.	4.896c
Whitaker Paper Co.	4.84c
Walker-Goulard-Plehn Co.	4.92c
Stanford Paper Co.	5.10c
R. P. Andrews Paper Co.	5.87c
Virginia Paper Co.	5.67c
Barton Duer & Koch Paper Co.	5.085c
Marquette Paper Co.	5.09c
Graham Paper Co.	5.70c
Paper Corp. of U. S.	5.90c

50 Per Cent Rag Index, White and Colored

No. 190—500,000 lbs., white, 22½x28½—182 and 230; flat, cut 21x32½, 22½x28½ and 24½x32½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.

Stanford Paper Co.	12.02c
Frank Parsons Paper Co.	12.66c
Barton Duer & Koch Paper Co.	8.15c
Marquette Paper Co.	9.50c
Graham Paper Co.	9.75c
Aetna Paper Co.	7.977c
Old Dominion Paper Co.	8.5913c

No. 191—25,000 lbs., white, 22½x28½—280 and 362; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 5,000 lbs.

Walker-Goulard-Plehn Co.	11.47c
Stanford Paper Co.	11.47c
Frank Parsons Paper Corp.	12.66c
Barton Duer & Koch Paper Co.	11.13c
Marquette Paper Co.	13.50c
Old Dominion Paper Co.	8.741c

No. 192—200,000 lbs., blue, buff, fawn, green, pink, salmon and yellow, 22½x28½—182 and 230; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight, 5,000 lbs.

Stanford Paper Co.	12.27c
Frank Parsons Paper Co.	13.41c
Barton Duer & Koch Paper Co.	8.15c
Marquette Paper Co.	10.00c
Graham Paper Co.	9.85c
Aetna Paper Co.	7.977c

No. 193—30,000 lbs., blue, buff, fawn, green, pink, salmon and yellow, 22½x28½—280 and 362; flat, cut 21x32½ and 22½x28½ ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight, 5,000 lbs.

Walker-Goulard-Plehn Co.	11.82c
Stanford Paper Co.	11.82c
Frank Parsons Paper Co.	13.41c
Barton Duer & Koch Paper Co.	11.13c
Marquette Paper Co.	14.50c

100 Per Cent Rag White Index

No. 196—90,000 lbs., 22½x28½—approximately 206; flat, cut 20½x30½ and 21x32½ ins.

L. Hyman & Sons	16.51c
Whitaker Paper Co.	19.96c
Walker-Goulard-Plehn Co.	18.71c
Stanford Paper Co.	16.59c
R. P. Andrews Paper Co.	20.73c
Frank Parsons Paper Co.	17.18c
Lee Paper Co.	19.92c
Barton Duer & Koch Paper Co.	16.08c
Mathers-Lamm Paper Co.	16.49c
Marquette Paper Co.	16.25c

White Tissue

No. 197—2,000 lbs., flat, 21x32—18. Min. order 1,000 lbs.

Mathers-Lamm Paper Co.	9.975c

Facing Stereo Tissue

No. 198—500 lbs., 19x24—9; rolls 24 in. wide (3-inch fiber cores). Min. order, 500 lbs.

No bids

Coated Cover, White and Colored

No. 201—30,000 lbs., white, 20x26—130 and 160; flat, 26½x41 ins., the grain to run lengthwise of the sheet. Min. order, 5,000 lbs.

John F. Post Inc.	6.45c
Whitaker Paper Co.	6.67c
Stanford Paper Co.	6.59c
Virginia Paper Co.	6.45c
Barton Duer & Koch Paper Co.	6.30c
Graham Paper Co.	6.39c

No. 202—30,00 lbs., India tint, light green, and emerald green, 20x26—100; flat, 26½x41 ins.

John F. Post, Inc.	6.85c [1] 7.45c [2] 8.00c [3]

Whitaker Paper Co.	6.84c [1]
	7.40c [2]
	7.75c [3]
Stanford Paper Co.	6.97c [1]
	7.59c [2]
	8.00c [3]
Virginia Paper Co.	7.20c
Barton Duer & Koch Paper Co.	7.02c
Graham Paper Co.	7.14c

[1] India [2] Light Green [3] Emerald.

Machine-Finish Cover, White and Colored

No. 203—130,000 lbs., antique; white, dawn, quaker drab, robin's egg, terra cotta, light blue, dark blue, buff, gold, cream, light gray, dark gray, light brown, dark brown, light green, dark green, sage, gobelin blue, and coral red; flat, 20x25—96, with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,500 lbs.

Whitaker Paper Co.	8.19c
Stanford Paper Co.	6.85c
R. P. Andrews Paper Co.	6.77c
Marquette Paper Co.	6.68c
Graham Paper Co.	8.00c

No. 204—80,000 lbs., smooth; white, blue, brown, granite, green, pink, tea and yellow, 20x26—100; flat cut 20x25 and 33x46 ins., with projecting colored-paper marker between each 500 sheets. Min. order, one color, 5,000 lbs.

Whitaker Paper Co.	8.19c
Stanford Paper Co.	6.85c
R. P. Andrews Paper Co.	6.70c
Marquette Paper Co.	6.68c
Graham Paper Co.	8.00c

50 Per Cent Rag Laid Cover, Colored

No. 205—30,000 lbs., blue, cream, white, gray and green, 20x26—130; flat, cut 20x25, 22x33, 26½x41, and 28x41 ins., with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,000 lbs.

R. P. Andrews Paper Co.	9.49c
Lee Paper Co.	10.25c
Graham Paper Co.	10.25c

Wood Manila

No. 209—200,000 lbs., 24x36—80 to 120; flat, cut 21x32, 22½x34½, 25x38 and 32x36 ins., in wrapped bundles with projecting colored-paper marker between each 500 sheets.

Cauthorne Paper Co.	3.67c
Barton, Duer & Koch Paper Co.	3.90c
Paper Corp. of U. S.	3.93c
Old Dominion Paper Co.	3.8464c

No. 210—250,000 lbs., 24x36—80 to 120; rolls, 18 and 21 ins. wide (3-inch fiber cores).

Cauthorne Paper Co.	3.47c
Barton, Duer & Koch Paper Co.	3.65c
Paper Corp. of U. S.	3.68c
Old Dominion Paper Co.	3.5964c

Chemical Wood Manila

No. 211—40,000 lbs., 24x36—100 to 160; flat, cut any size in wrapped bundles. Min. order, one weight, 5,000 lbs.

Barton, Duer & Koch Paper Co.	4.90c
Paper Corp. of U. S.	4.98c
Old Dominion Paper Co.	5.649c

Rope Manila

No. 213—10,000 lbs., 24x36—120, 140 and 160; rolls, 18 and 48 ins. wide (3-inch fiber cores). Min. order, 5,000 lbs.

R. P. Andrews Paper Co.	15.55c

No. 214—10,000 lbs., 24x36—280; rolls, 48 ins. wide (3-inch fiber cores). Min. order, 5,000 lbs.

R. P. Andrews Paper Co.	14.55c

Drumhead Manila

No. 215—30,000 lbs., 24x36—280; flat, cut 20x30 and 26x42 ins. Min. order, 5,000 lbs.

L. Hyman & Sons	14.50c
Barton, Duer & Koch Paper Co.	14.65c

No. 2 Kraft

No. 217—200,000 lbs., 24x36—80 to 160; flat, cut any size in wrapped bundles.

Perkins-Goodwin Co.	3.87c
L. Hyman & Sons	3.38c
Cauthorne Paper Co.	3.394c
Whitaker Paper Co.	3.67c
R. P. Andrews Paper Co.	3.49c
Barton, Duer & Koch Paper Co.	3.67c
Mathers-Lamm Paper Co.	4.00c
Graham Paper Co.	3.75c
Paper Corp. of U. S.	3.41c
Enterprise Paper Co. (less 2%)	3.75c
Old Dominion Paper Co.	3.74c

No. 218—200,000 lbs., 24x36—80 to 160; cut any size, folded (25 sheets per fold), in wrapped bundles.

Perkins-Goodwin Co.	3.87c
L. Hyman & Sons	3.38c
Cauthorne Paper Co.	3.394c
Whitaker Paper Co.	3.67c
R. P. Andrews Paper Co.	3.49c
Barton, Duer & Koch Paper Co.	3.67c
Mathers-Lamm Paper Co.	4.00c
Graham Paper Co.	3.75c
Paper Corp. of U. S.	3.41c
Enterprise Paper Co. (less 2%)	3.75c
Old Dominion Paper Co.	3.74c

No. 219—350,000 lbs., 24x36—80 to 160; rolls, 9, 10½, 11½, 24, 36, 39, and 48 ins. wide, wound on wooden plugs, 1½-inch hole, or on 3-inch fiber cores as may be specified.

Perkins-Goodwin Co.	3.61c
L. Hyman & Sons	3.14c
Cauthorne Paper Co.	3.152c
Whitaker Paper Co.	3.43c
R. P. Andrews Paper Co.	3.24c
Barton, Duer & Koch Paper Co.	3.43c
Mathers-Lamm Paper Co.	3.75c
Graham Paper Co.	3.75c
Paper Corp. of U. S.	3.153c
Enterprise Paper Co. (less 2%)	3.50c
Old Dominion Paper Co.	3.49c

No. 1 Kraft

No. 220—5,000 lbs., 24x36—120 and 160; flat, cut any size in wrapped bundles.

Graham Paper Co.	4.00c
Paper Corp. of U. S.	5.50c
Old Dominion Paper Co.	4.63c

White Paraffin

No. 251—1,500 lbs., flat, 24x38—32. Min. order, 1,000 lbs.

R. P. Andrews Paper Co.	10.19c
Enterprise Paper Co.	9.85c

White Gummed

No. 252—400,000 sheets, flat, 17x22—40, exclusive of weight of gum used. Min. order, 50,000 sheets.

	Per M. Sheets
L. Hyman & Sons	4.93c
Cauthorne Paper Co.	4.788c
Walker-Goulard-Plehn Co.	4.71c
Stanford Paper Co.	4.83c
Andrews Paper House of York	4.68c
R. P. Andrews Paper Co.	4.69c
Virginia Paper Co.	4.58c
Barton, Duer & Koch Paper Co.	5.55c
Eureka Specialty Printing Co.	5.60c
Enterprise Paper Co.	4.6258c
Old Dominion Paper Co.	4.624c
Graham Paper Co.	4.58c

Blotting, White and Colored

No. 254—16,000 lbs., white, flat, 19x24—160, in wrapped bundles. Min. order, 4,000 lbs.

Butler Paper Co.	4.445c
L. Hyman & Sons	4.44c
Mudge Paper Co.	4.85c
Cauthorne Paper Co.	4.88c
Whitaker Paper Co.	4.54c
Stanford Paper Co.	4.45c
R. P. Andrews Paper Co.	5.17c
Frank Parsons Paper Co.	4.88c
Virginia Paper Co.	4.85c
Barton, Duer & Koch Paper Co.	4.79c
Mathers-Lamm Paper Co.	4.848c
Graham Paper Co.	4.47c
Enterprise Paper Co.	5.1975c
Old Dominion Paper Co.	4.898c

No. 255—2,000 lbs., buff and salmon, flat, 19x24—160, in wrapped bundles. Min. order, 2,000 lbs.

Butler Paper Co.	5.30c
L. Hyman & Sons	5.26c
Mudge Paper Co.	5.14c
Cauthorne Paper Co.	5.18c
Whitaker Paper Co.	5.00c
Stanford Paper Co.	5.30c
R. P. Andrews Paper Co.	5.67c
Frank Parsons Paper Co.	5.18c
Virginia Paper Co.	5.14c
Barton, Duer & Koch Paper Co.	5.11c
Mathers-Lamm Paper Co.	5.20c
Graham Paper Co.	5.30c
Enterprise Paper Co.	5.247c
Old Dominion Paper Co.	5.199c

25 Per Cent Rag Blotting, White and Colored

No. 256—10,000 lbs., white, flat, 19x24—160, in wrapped bundles. Min. order, 10,000 lbs.

Butler Paper Co.	5.281c
L. Hyman & Sons	5.25c
Mudge Paper Co.	5.98c
Cauthorne Paper Co.	5.94c
Whitaker Paper Co.	5.29c
Stanford Paper Co.	5.27c
R. P. Andrews Paper Co.	5.97c
Frank Parsons Paper Co.	6.02c
Virginia Paper Co.	5.96c
Barton, Duer & Koch Paper Co.	5.94c
Mathers-Lamm Paper Co.	5.966c
Graham Paper Co.	5.30c
Enterprise Paper Co.	6.732c
Old Dominion Paper Co.	6.029c

No. 257—3,000 lbs., buff and salmon, flat, 19x24—160, in wrapped bundles. Min. order, one color, 2,000 lbs.

Butler Paper Co.	6.00c
L. Hyman & Sons	5.955c
Mudge Paper Co.	6.69c
Cauthorne Paper Co.	6.69c
Whitaker Paper Co.	5.79c
Stanford Paper Co.	6.00c
R. P. Andrews Paper Co.	6.79c
Frank Parsons Paper Co.	6.75c
Virginia Paper Co.	6.68c
Barton, Duer & Koch Paper Co.	6.65c
Mathers-Lamm Paper Co.	6.75c
Graham Paper Co.	6.00c
Enterprise Paper Co.	7.029c
Old Dominion Paper Co.	6.749c

Desk Blotting, Colored

No. 258—7,000 lbs., blue and buff, flat, 19x24—200, in wrapped bundles. Min. order, one color, 5,000 lbs.

Butler Paper Co.	4.68c
L. Hyman & Sons	4.645c
Mudge Paper Co.	5.01c
Cauthorne Paper Co.	4.98c
Whitaker Paper Co.	4.80c
Stanford Paper Co.	4.65c
R. P. Andrews Paper Co.	4.97c
Frank Parsons Paper Co.	5.06c
Virginia Paper Co.	5.00c
Barton, Duer & Koch Paper Co.	4.98c
Mathers-Lamm Paper Co.	5.00c
Graham Paper Co.	4.68c
Enterprise Paper Co.	4.8015c
Old Dominion Paper Co.	5.058c

No. 259—100,000 lbs., moss-green, flat, 19x24—200, in wrapped bundles. Min. order, 10,000 lbs.

Butler Paper Co.	4.708c
L. Hyman & Sons	4.735c
Mudge Paper Co.	4.81c
Cauthorne Paper Co.	4.479c
Whitaker Paper Co.	4.57c
Stanford Paper Co.	4.73c
R. P. Andrews Paper Co.	4.52c
Frank Parsons Paper Co.	4.85c
Virginia Paper Co.	4.80c
Barton, Duer & Koch Paper Co.	4.74c
Mathers-Lamm Paper Co.	4.77c
Graham Paper Co.	4.78c
Enterprise Paper Co.	4.752c
Old Dominion Paper Co.	4.8449c

White Stereotype Molding

No. 260—1,500 lbs., 19x24—120; rolls,

24 ins. wide (3-inch fiber cores). Min. order, 1,000 lbs.

Butler Paper Co.	7.98c
L. Hyman & Sons	7.95c
Cauthorne Paper Co.	8.94c
Stanford Paper Co.	8.00c
Graham Paper Co.	8.00c

Red Stereotype Molding

No. 261—1,000 lbs., 19x24—40; rolls, 24 in. wide (3-inch fiber cores). Min. order, 1,000 lbs.

Butler Paper Co.	9.00c
L. Hyman & Sons	8.95c
Mudge Paper Co.	6.50c
Cauthorne Paper Co.	13.88c
Stanford Paper Co.	9.00c
Graham Paper Co.	9.00c

Oiled Manila Tympan

No. 262—20,000 lbs., 24x36—approximately 210; rolls, 38 and 48 ins. wide; 10-inch diameter; wound on wooden plugs, 1½-inch hole. Min. order, 5,000 lbs.

Linke Paper Co.	7.49c
Cromwell Paper Co.	7.75c
R. P. Andrews Paper Co.	7.375c
Graham Paper Co.	6.50c
Old Dominion Paper Co.	7.489c

Plate, Wiping, for Embossing Presses

No. 263—3,000 lbs., 24x36—100; rolls, 24 ins. wide (3-inch fiber cores). Min. order, 1,000 lbs.

R. P. Andrews Paper Co.	7.17c
Barton, Duer & Koch Paper Co.	7.50c

Back-Lining for Case-Making Machines

No. 264—3,000 lbs., 24x36—180; rolls, 24 ins. diameter, 37 ins. wide (3-inch fiber cores). Min. order, 2,000 lbs.

Barton, Duer & Koch Paper Co.	3.49c

High-Finish Red Sulphite

No. 265—7,000 lbs., flat, 24x36—320 and 400, in wrapped bundles. Min. order, 5,000 lbs.

Mudge Paper Co.	5.90c
Whitaker Paper Co.	7.25c

High-Finish Sulphite Manila Tag

No. 271—80,000 lbs., 24x36—160 to 280; flat, cut any size, min. width 24 ins., max. width 38 ins., in wrapped bundles.

Whitaker Paper Co.	4.69c
R. P. Andrews Paper Co.	4.95c
Marquette Paper Co.	5.48c
Paper Corp. of U. S.	4.12c
Old Dominion Paper Co.	5.644c

Calendered Tag, Manila and Colored

No. 276—1,300,000, lbs., manila, 22½x28½—approximately 148; rolls, 23¼ and 26½ in. wide (6-inch iron cores).

Cromwell Paper Co.	7.50c
Fitchburg Paper Co.	6.47c
Barton, Duer & Koch Paper Co.	6.37c

No. 277—250,000 lbs., blue, brown, green, pink, red, salmon and yellow, 22½x28½—approximately 148; rolls, 23¼ and 26½ in. wide (6-inch iron cores). Min. order, one color, 10,000 lbs.

Fitchburg Paper Co.	7.47c
Barton, Duer & Koch Paper Co.	7.37c

Jute Tag

No. 280—30,000 lbs., 22½x28½—200 and 280; flat, cut 22½x28½ ins., in wrapped bundles. Min. order, one weight, 10,000 lbs.

Mudge Paper Co.	7.45c
Whitaker Paper Co.	8.25c
Barton, Duer & Koch Paper Co.	11.35c

Manila Board

No. 281—30,000 lbs., 22½x28½—400; flat, cut 17x28, 21x32, and 22½x28½ ins., in wrapped bundles with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.

R. P. Andrews Paper Co.	4.00c
Paper Corp. of U. S.	5.12c

Railroad Board, White and Colored

No. 302—80,000 sheets, white, flat, 22x28 ins., 4-ply, each 100 sheets fully banded, packed in wooden cases. Min. order, 10,000 sheets.

	Per M. Sheets
Whitaker Paper Co.	$21.02
Stanford Paper Co.	$22.04
R. P. Andrews Paper Co.	$21.93
Barton, Duer & Koch Paper Co.	$22.00
Paper Corp. of U. S.	$21.75

No. 303—15,000 sheets, white, flat, 22x28 ins., 8-ply, each 100 sheets fully banded, packed in wooden cases. Min. order, 5,000 sheets.

	Per M. Sheets
Whitaker Paper Co.	$31.86
Stanford Paper Co.	$33.50
R. P. Andrews Paper Co.	$33.27
Barton, Duer & Koch Paper Co.	$34.99
Paper Corp. of U. S.	$33.75

No. 304—20,000 sheets, white, flat, 22x28 ins., 14-ply, each 50 sheets fully banded, packed in wooden cases. Min. order, 5,000 sheets.

	Per M. Sheets
Whitaker Paper Co.	$45.39
Stanford Paper Co.	$44.92
R. P. Andrews Paper Co.	$44.97
Barton, Duer & Koch Paper Co.	$44.50
Paper Corp. of U. S.	$44.75

No. 305—30,000 sheets, ash gray, blue, buff, green, lemon and orange, flat 22x28 ins. 4-ply, each 100 sheets fully banded, packed in wooden cases. Min. order, one color, 5,000 sheets.

	Per M. Sheets
Whitaker Paper Co.	$29.02
Stanford Paper Co.	$28.75
Barton, Duer & Koch Paper Co.	$28.56
Paper Corp. of U. S.	$29.00

Wood Bristol, Colored

No. 306—200,000 lbs., buff, 22½x28½—150; rolls, 22 ins. wide (6-inch iron cores).

Barton, Duer & Koch Paper Co.	3.95c
Old Dominion Paper Co.	3.936c

No. 307—40,000 lbs., blue, buff, gray, green, melon, pink, quaker-drab and yellow, flat, 21x31—204; in wrapped bundles with projecting colored-paper marker between each 100 sheets.

Barton, Duer & Koch Paper Co.	3.95c
Old Dominion Paper Co.	4.244c

No. 308—60,000 lbs., blue, brown, buff, gray, green, melon, pink and yellow, 22½x28½—200; rolls 20 ins. wide (6-inch iron cores).

Barton, Duer & Koch Paper Co.	3.95c
Old Dominion Paper Co.	3.897c

No. 309—60,000 lbs., blue, brown, buff, gray, green, melon, pink and yellow, 22½x28½—200; rolls 20 ins. wide (6-inch iron cores).

Barton, Duer & Koch Paper Co.	3.95c
Old Dominion Paper Co.	3.897c

No. 310—60,000 lbs., buff, 22½x28½—200; flat, cut 12x18 and 14½x17½ ins., the grain to run lengthwise of the sheet, in wrapped bundles with projecting colored-paper marker between each 100 sheets.

Mudge Paper Co.	3.79c
Barton, Duer & Koch Paper Co.	3.95c
Old Dominion Paper Co.	4.244c

United States Postal Card Bristol

No. 325—6,000,000 lbs., 22½x28½—188; rolls, 33 ins. wide and 36 ins. in diameter (6-inch iron cores).

Whitaker Paper Co.	3.94c
R. P. Andrews Paper Co.	3.93c
Barton, Duer & Koch Paper Co.	3.985c
Paper Corp. of U. S.	4.71c

Pressboard, Colored

No. 351—25,000 sheets, red, flat, 24x 32 ins., thickness .0140 inch. Min. order, 5,000 sheets.

	Per C sheets
Whitaker Paper Co.	$6.34
Walker-Goulard-Plehn Co.	$6.52
Resolute Paper Products Corp.	$7.155
Andrews Paper House of York	$5.375
Barton, Duer & Koch Paper Co.	$6.09
Mathers-Lamm Paper Co.	$6.25

No. 352—5,000 sheets, gray, flat, 30x 36 ins., thickness .0300 inch. Min. order, 5,000 sheets.

	Per C sheets
Whitaker Paper Co.	$19.38
Walker-Goulard-Plehn Co.	$21.63
Resolute Paper Products Corp.	$22.667
Andrews Paper House of York	$16.975
Barton, Duer & Koch Paper Co.	$16.09
Mathers-Lamm Paper Co.	$19.19
Old Dominion Paper Co.	$18.139

News Board

No. 360—5,000 lbs., flat, 26x38 ins., No. 100 (to be trimmed square on four sides). Min. order, 1,000 lbs.

Mudge Paper Co.	1.603c
Whitaker Paper Co.	1.589c
Walker-Goulard-Plehn Co.	1.50c
Stanford Paper Co.	1.60c
R. P. Andrews Paper Co.	1.62c
Virginia Paper Co.	1.625c
Barton, Duer & Koch Paper Co.	1.58c
Enterprise Paper Co.	1.689c
Old Dominion Paper Co.	1.62c

Chip Board

No. 361—1,000,000 lbs., 26x38 ins., No. 50, flat; cut 21½x32½, 24½x38, 26x38, 28½x34½, 32½x42½ and 34x44.

Container Corp. of America	1.31c
Mudge Paper Co.	1.173c
Cauthorne Paper Co.	1.287c
	1.348c
Whitaker Paper Co.	1.1636c
Walker-Goulard-Plehn Co.	1.50c
Resolute Paper Products Corp.	1.2245c
Stanford Paper Co.	1.20c
R. P. Andrews Paper Co.	1.178c
Virginia Paper Co.	1.172c
Barton, Duer & Koch Paper Co.	1.17c
Mathers-Lamm Paper Co.	1.476c
Enterprise Paper Co.	1.199c
Old Dominion Paper Co.	1.1749c

Marble Grained Lined Board

No. 362—15,000 lbs., 26x38 ins., No. 50; flat, cut 22x32 ins.

Mathers-Lamm Paper Co.	4.88c

Strawboard

No. 363—5,000 lbs., flat, 26x38 ins., No. 50.

Mathers-Lamm Paper Co.	4.30c

Lined Chip Board

No. 364—5,000 lbs., flat, 26x38 ins., No. 50.

Mudge Paper Co.	1.813c
Whitaker Paper Co.	1.834c
Walker-Goulard-Plehn Co.	1.875c
Stanford Paper Co.	1.85c
R. P. Andrews Paper Co.	1.87c
Virginia Paper Co.	1.875c

—that's the average increase in effective screening area and decrease in slot width of over fifty new Bird Screens compared with the screens they replaced.

It means vastly more effective dirt removal due to gentler, more efficient screening action along with finer cut plates.

Can your present screening equipment provide the combination of capacity and screen slot you must have to meet today's standard of paper cleanness?

Let us send you all the facts and figures.

BIRD MACHINE COMPANY, SOUTH WALPOLE, MASS.

BIRD SCREENS

You can make more money with new Bird Machinery!

Barton, Duer & Koch Paper Co..	1.80c
Enterprise Paper Co.....	1.85625c
Old Dominion Paper Co.....	1.87c

Lined Box Board

No. 365—36,000 lbs., 26x38 ins., No. 40; flat, cut 24½x34 ins. Min. order 36,000 lbs.

Mudge Paper Co.....	1.6955c
Whitaker Paper Co.....	1.71c
Walker-Goulard-Plehn Co.....	1.875c
Resolute Paper Prods. Co.....	1.73225c
Stanford Paper Co.....	1.72c
R. P. Andrews Paper Co.....	1.70c
Virginia Paper Co.....	1.695c

Barton, Duer & Koch Paper Co..	1.67c
Enterprise Paper Co.....	1.68c
Old Dominion Paper Co.....	1.7149c

Binder's Board, No. 1 Quality

No. 366—230,000 lbs., flat, to trim 25x30 ins., Nos. 16, 18, 20, 25, 30 and 40.

Resolute Paper Products Corp....	3.65c
R. P. Andrews Paper Co.....	3.50c
Barton, Duer & Koch Paper Co...	3.50c
Mathers-Lamm Paper Co.....	3.45c
Graham Paper Co.....	3.65c

No. 367—80,000 lbs., 25¾x30¾ ins., Nos. 12 and 20; flat, to trim 34x44 ins.

Resolute Paper Products Corp....	3.65c
R. P. Andrews Paper Co.....	3.50c
Barton, Duer & Koch Paper Co...	3.50c
Mathers-Lamm Paper Co.....	3.45c
Graham Paper Co.....	3.65c

Binder's Board, Best Quality

No. 368—70,000 lbs., flat, to trim 20x30 ins., and 22x28 ins., Nos. 18, 20, 25, 30, 35, 40 and 45.

Resolute Paper Products Corp....	4.90c
R. P. Andrews Paper Co.....	4.855c
Barton, Duer & Koch Paper Co...	5.25c
Graham Paper Co.....	4.90c

Crane Co. at World's Fair

The familiar figure of a newsboy holding out a newspaper is the introduction to a paper industry display which Crane Company has erected at the New York World's Fair. It is designed to impress the consumer with the fact that a vast machinery of paper manufacture and distribution lies behind the paper products which reach their ultimate destiny in the performance of some service for the average man.

A pipe, equipped with valves and fittings, directs the attention of the onlooker from the figure of the newsboy and his newspaper to a large mural in the background, a part of which is a pulp mill represented by a silhouetted cutout.

Other industries portrayed in their relation to the ultimate consumer in this Crane exhibit include water works, oil and gas, food, transportation and power and light. Large fins separating the various displays are covered with photo murals showing the application of Crane valves, fittings and pipe. Emphasis is placed on each section by lights which come on at four second intervals, from left to right, until all the lights are on. They are left on four seconds, then entirely off two seconds after which they come on again by sections from left to right.

The Crane industrial exhibit in the Home Building Products Exhibit building is one unit in a comprehensive display which includes plumbing and heating equipment in appropriate settings and a towering microscope focussed on a transparent house in which the plumbing and heating systems are outlined. Crane's representation at the Fair also includes participation in the fifteen houses of the "Town of Tomorrow" and a complete pumping and plumbing system at the Electrified Farm of the Electric Utility Industry.

Lyden Moves to Newark

Frank P. Lyden, dealer in used and rebuilt paper and pulp machinery, with an office at 11 West 42nd street, New York, has announced that he has formed a partnership with the J. J. Ross Company, 250 Frelinghuysen avenue, Newark, N. J., and that his office will be moved to the above address. The company has recently acquired a new warehouse and contemplates the installation of a machine shop to rebuild and recondition used paper mill machinery. The present location on the Lehigh Valley Railroad, consists of ten acres of land, sidings and warehouses. Customers are invited to inspect the equipment and arrangements will be made to meet them at the Pennsylvania Station in Newark. With the above facilities the company is better equipped to extend service to its customers than in the past.

Mutual Paper Co. Improves Service

To provide more immediate service to uptown New York paper jobbers, The Mutual Paper Company, Inc., 129 Greene Street, has opened a warehouse at 418 West 35th street, where it will carry a complete variety of items, but small quantities of each. Here jobbers who need goods immediately, and cannot wait for the two regular daily deliveries, can pick up the items they need, without sending their trucks through downtown traffic to the main warehouse.

The new warehouse is under the supervision of Perry Rudnick. He notifies the main warehouse of every item picked up, and three times daily his stock is replenished. On a through telephone line the uptown office receives orders from the main office, where all orders are originally received.

The company has recently issued a list of its permanent stock, which includes several new lines including special kraft pattern, duplex pattern in red and golden, green and white, and Swedish M. G. Kraft. Also listed are the four types of drinking cups which Mutual began to stock last year, as well as regular lines of wrappings, tissues, pattern paper and twines.

Max Weill, well-known throughout the trade for 43 years, maintains his interest in the firm but because of ill health is not active in the management of the business. Jack Weill, a son, is president. Robert J. Rudnick is treasurer. Victor Weill, another son is secretary.

Subsidized Import Competition

The United States Pulp Producers Association has announced that it is endeavoring to obtain Government action in the matter of relief for the domestic pulp industry from the current conditions of intensified import competition.

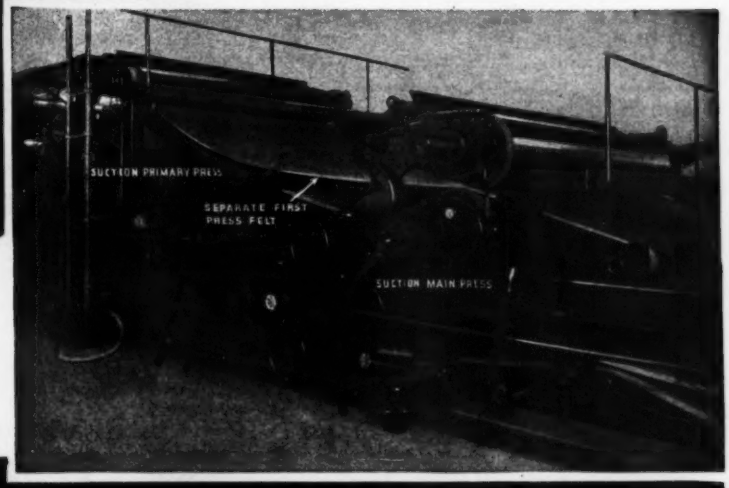
In a pamphlet on "Subsidized import competition threatens to cripple the wood pulp industry of the United States", the basic elements of present competition are given as: depreciated foreign currencies, dumping of European pulps in the United States market, lower foreign ocean freight rates, and lower European labor costs.

A second pamphlet on "The effect of depreciated foreign currencies on commodity prices in the United States", presents the basic elements of the depressing effect of depreciated foreign currencies on industries whose products are on the free list. The remedy suggested is "legislation at once to provide countervailing duties on both protected and free articles in competitive trade to neutralize the effects of depreciated foreign currencies."

Suctionize

YOUR BOARD MACHINE WITH Beloit SUCTION

DRUM PRESS *
PRIMARY PRESS
MAIN PRESS



Note the short top felt for suction drum press nip. All plain primaries have been removed.

Wet pickup felt returns after suction primary press. Suction first press is on separate felt.

1. Removes large quantity water without disturbing formation or finish.
2. Reduces crushing and checking.
3. Improves finish. Reduces felt marks.
4. Permits use of light weight short top felt. Lower felt cost.
5. Eliminates several nips. Improves test of board.
6. Permits more bulk if desired.
7. Increases test or permits cheaper furnish and maintain same test.
8. Suction main press more efficient on separate felt.

* Suction drum press is equivalent to suction drum and suction primary press.

BELOIT IRON WORKS PAPER MACHY BELOIT WIS

THE BELOIT WAY IS THE MODERN WAY

BELOIT IRON WORKS, BELOIT, WIS.

Furniture Prepack Assn. Formed

CHICAGO, Ill., May 15, 1939—E. A. Throckmorton, general manager in charge of sales promotion activities for Container Corporation of America, was chosen to head the paperboard container industry's newly formed Furniture Prepack Association when representatives of several leading container manufacturers gathered here last week to launch a significant industry move.

The group established three objectives. In addition to recommending new specifications for furniture packing to the railroad classification committees, the container industry expects to conduct a personalized advisory service to furniture manufacturers and retailers, pointing out advanced methods of furniture prepackaging in paperboard. Similarly, in their own industry, the paperboard group expects to establish and maintain uniform packing practices.

Originally backed by the National Retail Furniture Association and the National Container Association and with the aid of the national container testing laboratories, the paperboard group anticipates rapid changes that may revolutionize present-day methods of packing, storing and merchandising furniture. At present, the industry organization consists of American Box Board Company, Container Corporation of America, Fibre Board Container Company, Gaylord Container Corporation and the Hinde & Dauch Paper Company, but the group has extended invitations to virtually every American paperboard manufacturer.

As furniture is traditionally a commodity that has been packed in wooden crates, manufacturers and retailers have been slow to follow, without convincing proof, the general trend toward paperboard packaging. Growing demand from retailers last year stimulated the beginning of research activities under the leadership of the National Retail Furniture Association. Items of comparative shipping costs, unpacking costs, stock costs, repair costs, and delivery costs were carefully weighed. A committee report made by Walter S. Baumann, Brooklyn, N. Y., revealed that paperboard packing in the brief space of 12 months had been so successful that more than 100 furniture manufacturers were already using it for leading items. Surveys conducted in New York, California and Louisiana revealed that paper carton packed furniture reached its destination without damage, could be unpacked quickly and needed only a sweep of a dust cloth before being displayed.

Many furniture retailers believe the day is not far away when most furniture will be delivered to the customer's home packed in the manufacturer's original paperboard carton.

Argentina's Pulp Capacity

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 3, 1939—There is but one producer in Argentina of pulp for paper making. This is the Celulosa Argentina Sociedad Anomina, Juan Ortiz. This company produced during 1938 15,500 metric tons of pulp from straw, and at their mill at Zarate 2,500 tons of wood pulp. At the present time production continues roughly at the rate of 300 metric tons per month.

Imports of wood pulp into Argentina are not classified by types. Receipts during 1938 were 10 per cent under those recorded for 1937. Apparently there is quite a variance year by year as to countries of origin, although the 3 Scandinavian countries account for over 90 per cent of the total.

To Study New Pulp Outlets

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 15, 1939—Secretary of Commerce Harry L. Hopkins has directed the Forest Products Division of the Bureau of Foreign and Domestic Commerce to begin an intensive study of South American and Latin American market possibilities for United States wood pulp and paper products.

The survey is part of the Commerce Department's "aids to business" program and was instigated by a request for such information from representatives of the wood pulp and paper industry.

Since South American trees are not particularly suited to the manufacture of paper pulp, large quantities of this commodity are being imported at the present time from various European sources. The recent installation of 15 new mills in southern States will add a large tonnage of kraft pulp to the present U. S. production at the end of this year, and while a large part of this additional production will be used by the domestic paper industry, it is apparent that foreign markets must be developed if the new pulp mills are to be operated at capacity, Secretary Hopkins said.

The survey will be conducted in Argentina, Brazil, Chile, Colombia, Peru, Venezuela, Bolivia, Ecuador and Uruguay, as well as in Cuba and Mexico. Thorough reports on all wood-pulp and paper mills, their equipment, production, trends of the industry, present sources of supply and price information will be made in these countries. A second report on marketing conditions of converted paper products such as container board for shipping containers, wrapping paper and bags will also be made as a supplement to the wood-pulp study.

Questionnaires prepared in the Forest Products Division have been forwarded to United States commercial attaches and consular officers for guidance in conducting the survey in the aforementioned South American and Latin American countries.

New Corrosion Resistant Bearings

A new development now makes it possible to use ball and roller bearings in services involving exposure to many corrosive liquids, and gases. Bantam Bearings Corporation of South Bend, Ind., has announced production of bearings made of "K" Monel in all required sizes and types.

This nickel-copper alloy can be heat-treated to provide a hardness, wear-resistance and strength not ordinarily associated with non-ferrous bearing materials. Its resistance to corrosion is such that it can withstand the action of many acids, most alkalies and a wide range of gases. Furthermore, it retains high mechanical properties over a range from low sub-zero temperatures to above 800 degrees F. It is non-magnetic down to —110 degrees F.

Many uses already have been indicated for these new bearings in pulp and paper plants, in food handling equipment, chemical plants, motor boat service and elsewhere where it is not practical to protect ordinary bearings with housings or grease and where slight changes in design and increases in diameters over corrodible materials, are permissible.

Indications point to the value of these bearings for such paper plant applications as Jordan machines, rolls on Fourdrinier and dryer sections on paper machines, and rotary screen shafts.

Obituary

Zeiber W. Ranck

Zeiber W. Ranck, 56, president of the Crystal Tissue Company, the Crystal Waxing Company and director of the Oglesby-Barnitz Bank & Trust Company, Middletown, Ohio, died May 10 of Verdans streptococcus at the Middletown Hospital. He had been ill four months.

Mr. Ranck was born in Laurelville, Pickaway County, Ohio, the son of Josiah Ranck, a construction engineer. He entered business in 1900 as an office boy with the Lima Steel Castings Company, Lima, Ohio, then under the management of D. E. Harlan. When Mr. Harlan came to the Crystal Paper Company in 1903, Mr. Ranck was sent for to fill the position of bookkeeper. Within a short time Mr. Ranck became assistant to the president and manager of the Crystal company. On the retirement of D. E. Harlan in 1920, Mr. Ranck at the age of 37 reorganized and became president and general manager of the new corporation, The Crystal Tissue Company. In 1923 the growing company purchased the majority of the stock of The Shelby Waxed Paper Company, Shelby, Ohio, moved it to Middletown and Mr. Ranck formed The Crystal Waxing Company and became its president and general manager.

At the beginning of Mr. Ranck's connection with The Crystal Paper Company the concern had a daily output of 3,000 pounds of paper. Under his capable management the mill expanded from two machines to four cylinder machines, producing 25,000 pounds daily. The mill now is equipped with two cylinder and two Fourdrinier machines, employs 275 people and has a daily production of 80,000 pounds of paper.

The Crystal Tissue Company in 1930 received the National Safety Council's award in the annual safety contest of the paper industry for the best no-accident record among forty-two mills, and the best record among 124 mills.

Mr. Ranck was president for three years of the original Tissue Paper Manufacturers' Association and when the Association was reorganized he again headed the organization. At the time of his death he was serving on the board of governors of The Tissue Association. He also served on several committees of the National Association of Manufacturers, for two years was counsellor and delegate to the National Chamber of Commerce, and was an active member of the Ohio Chamber of Commerce and of the Ohio Manufacturers' Association. For many years Mr. Ranck was prominent in the Middletown First Presbyterian Church and from 1913 until a few months ago, was a member of the Civil Service Commission.

Surviving are his widow, the former Zara Belle Geach of Lima, Ohio, and a daughter, Ruth Eleanor.

European Conditions Delay Pulp Mill

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., May 13, 1939—Hopes for the establishment of a pulp mill at Prince Rupert, B. C., have been in no sense abandoned, but the international situation has retarded the securing of British capital for the project and it is believed that no further action will be taken until the European conditions have somewhat adjusted themselves.

FINLAND SUOMI

REPRESENTATIVES IN U. S. A. AND MEXICO

OF THE

FINNISH CELLULOSE ASSOCIATION

HELSINGFORS, FINLAND

FINNISH WOOD PULP UNION

HELSINGFORS, FINLAND

PULP SALES CORPORATION

230 PARK AVENUE

NEW YORK, N. Y.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Pensacola, Fla.—The Armstrong-Newport Company, manufacturer of insulating board products, has plans under way for one-story addition to mill, reported to cost over $35,000, with equipment. Work is scheduled to be placed under way soon.

Hartford, Conn.—The Sanitary Paper Company, Forbes street, East Hartford, manufacturer of special paper products, has plans under way for one-story addition to converting plant. No estimate of cost has been announced. It is proposed to begin work at early date.

Nitro, W. Va.—The American Viscose Corporation, 200 Madison avenue, New York, N. Y., manufacturer of cellulose rayon products, has completed plans for five new buildings at branch mill at Nitro, each one-story, to be used for laboratory, shop and general operating service, including office expansion. New units are reported to cost close to $100,000, with equipment. General erection contract has been awarded to John P. Pettyjohn & Company, 212 Eighth street, Lynchburg, Va., and work is scheduled to be placed under way at once. The Ballinger Company, 105 South Twelfth street, Philadelphia, Pa., is architect and engineer.

Brooklyn, N. Y.—The Hano Paper Company, Inc., recently organized with capital of $20,000, to deal in paper products, will take over and succeed to the Hano Paper Corporation, 59 Pearl street, under a reorganization program.

Chicago, Ill.—The Arrow Match Company, 3033 West Grand avenue, manufacturer of book matches, is considering construction of a new plant on tract of land at North avenue and First street, Proviso Township, Cook County, vicinity of Chicago. It will consist of a group of eight one- and two-story structures, with complete unit for paper-converting, with facilities for cutting, storage and other service. Also for general production, printing and office purposes. New plant is reported to cost about $150,000, with equipment. It is proposed to select an architect to prepare detailed plans at early date. C. K. Levey is secretary.

Menasha, Wis.—Fire recently damaged a portion of the storage building at mill of the Marathon Paper Mills Company, River street. An official estimate of loss has not been announced, but is reported as slight. It is proposed to rebuild the structure.

Kansas City, Kan.—The Agar Manufacturing Corporation, Thomas street, Whippany, N. J., manufacturer of corrugated boxes and containers, has steel frame superstructure under way on new branch plant on Kansas avenue, Kansas City, previously referred to in these columns, and is awarding miscellaneous contracts for different features of construction. An award for painting has been made to Clarence Evans, 5024 Park street, Kansas City, Mo. It will include a main manufacturing building, one-story, 150 x 400 feet, and a storage and distributing structure of same size. Also a boiler house and auxiliary buildings, with office unit, one-story 40 x 102 feet. Erection is being carried out by the Fogel Construction Company, Reliance Building, Kansas City, Mo. It is proposed to have the plant ready for occupancy by early fall. It is estimated to cost approximately $185,000, including equipment. Calvin A. Agar is president of company.

Dallas, Tex.—Fleming & Sons, 1116 East 12th street, manufacturers of paper products, have plans maturing for rebuilding of portion of plant, destroyed by fire a few weeks ago, and is said to be arranging for early call for bids. The fire loss was reported at approximately $25,000, and reconstruction will represent close to a like amount.

Waltham, Mass.—The Davenport Garnet Company, South Danbury, N. H., manufacturer of abrasives for use in production of sandpaper and other abrasive papers, etc., has purchased the plant of the Atlas Chemical Company, Calvary street, Waltham closed for a number of years, and will remodel and equip for new mill. The property consists of several buildings, totaling about 40,000 square feet of floor space, and will be developed for large capacity by the Davenport company. Work will be placed under way at once.

Lufkin, Tex.—The Southland Paper Mills, Inc., Lufkin, now building a local pulp and paper mill for newsprint production, as previously noted in these columns, is placing orders for main equipment for plant, and has awarded contract to the Pusey & Jones Corporation, Wilmington, Del., for a new 234-inch Fourdrinier paper machine and auxiliary equipment. Work on building of the unit will proceed at once, the machine to be ready for installation as soon as building is completed. Superstructure is in progress on different units at the mill, under direction of the Merritt-Chapman & Scott Corporation, 17 Battery place, New York, N. Y., which recently secured the general erection contract. The new mill is scheduled to be ready for service in 1940 and will represent

an investment of close to $5,000,000. A new townsite has been established for the plant, to be known as Village of Herty. Charles F. Hardy, 305 Broadway, New York, N. Y., is consulting engineer. Ernest L. Kurth is president.

New Companies, Etc.

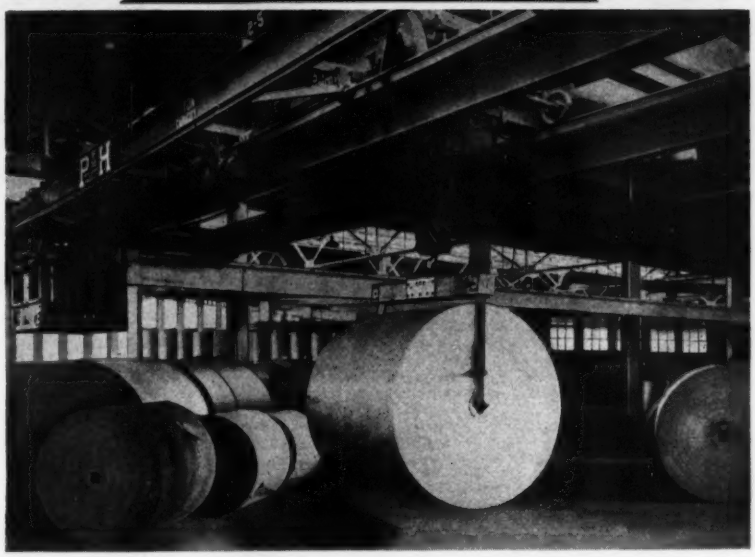
Chicago, Ill. — The Pearl Paper Products Company, 4891 North Hermitage avenue, has been incorporated with capital of 1000 shares of stock, no par value, to deal in paper products of various kinds, fiber and wood pulp, etc. Incorporators include R. Kagn and L. Kartman. New company is represented by Byron G. Sharp, 189 West Washington street, Chicago.

New York, N. Y.—The Perkins & Squier Company, Inc., has been incorporated with capital of $110,000, to deal in paper products of various kinds, and will take over and consolidate the company of same name at 235 West Thirty-fourth street, the P. & S. Co., Inc., incorporated in New Jersey, and the P. & S. Co., Inc., of New York. New comany is represented by William Rurode, 921 Bergen avenue, Jersey City, N. J., attorney.

New York, N. Y. — The B. H. Box Company, Inc., has been organized with capital of 100 shares of stock, no par value, to manufacture and deal in paper boxes and containers. New company is represented by David R. Logan, 26 Court street, Brooklyn, attorney.

Chicago, Ill. — The Arrow Paper Company, Inc., has been incorporated with capital of 50 shares of stock, to deal in commercial and other paper products. It will take over and succeed to the company of same name, with offices and distributing headquarters at 3423 Milwaukee avenue. Incorporators include H. W. and E. Kirschhoff and C. C. Chappelle.

P&H TRAV-LIFT CRANES



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When You Handle It "THRU THE AIR"

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Survey Cape Vincent Harbor

CAPE VINCENT, N. Y., April 24, 1939—Government engineers have been surveying the harbor here in an effort to find out how much work would be necessary to deepen it as requested by prominent paper manufacturers and other business men at a meeting here early in the winter. An official of the St. Regis Paper Company stated recently that deepening of the harbor would mean increased activity at the local port as large steamers with cargoes of pulpwood would be able to dock here. The survey showed a depth of water in the harbor ranging from 11 to 25 feet. The survey indicated that the channel could be easily dredged and at not very great expense to the government. Local business men are of the opinion that deepening of the waters here would greatly stimulate business inasmuch as the Cape Vincent Pulpwood Company could profitably handle a large amount of the St. Regis contracts through this port. It is also believed that other prominent paper mills in this section would find the port, if improved, to their advantage in securing their pulp wood requirements. Several concerns advocated deepening the harbor at the recent meeting here.

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION. Annual Convention, Wardman Park Hotel, Washington, D. C. June 13-15.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

GOVERNMENT ECONOMY NEEDED

The effect of the Administration's policy, which President Roosevelt once referred to as "investing for prosperity," and which can only be continued by higher taxation to finance the growing deficit between expenditures and receipts, continues to act as a brake on business expansion, with little hope of any reduction in taxes until the cost of government is reduced. Government economy is urgently needed. Unfortunately, the departmental reorganization plan approved by the President does not provide for any important reduction in expenditures. To the demand for tax revision to encourage recovery by organized business and labor, Senator Harry F. Byrd said that no substantial changes in Federal levies could be expected, except upward, so long as government spending continued on the present level.

In denouncing the New Deal taxation policy, Senator Byrd told business men attending the convention of the Chamber of Commerce of the United States, held at Washington May 1-4, that the present government was the "most wasteful and autocratic that this or any other country has ever been inflicted with. What business needs more than anything else is a long-range tax plan, so it will know four or five years in advance what the burden is to be. Tax reform in the removal and modification of tax barriers to business progress should not be delayed, but after all remember that expenditures regulate taxes. As long as we spend two dollars for every one the government receives, long range tax reform, so vital to business recovery, remain unattainable. To the contrary, unless retrenchment comes quickly we must prepare for greater tax burdens, falling heavily on every class of our citizens.

"We cannot collect nine or ten billions in federal taxes, pyramided on local and state taxations, and maintain our business progress and development. To reduce public spending becomes of imperative importance to every American who believes in our democracy, founded upon a government operated within the ability of the people to support. In my judgment, only an aroused public interest by the citizens who must sooner or later pay for these extravagances, will protect us from the disasters of uncontrolled inflation or taxes so high as to be confiscatory. Public spending grows by what it feeds on. Many more billions may be added to the public debt before this excessive spending is stopped, for the very simple reason that the experiences of all governments prove that one of the most difficult of all things is to eliminate spending that feeds great bureaucracies established and firmly entrenched in every hamlet of our vast country."

In presenting the viewpoint of labor on taxation, Matthew Woll, vice-president of the American Federation of Labor said in part: "Whatever may be the purposes of government, whether from the standpoint of the interests of labor or of capital, its operations must be paid for, and they must be paid for out of the product of industry. The more the government exacts in taxes, the less there is left to be spent by private persons at their discretion. In this country, more than one-fifth of the annual income is now taken by the various governments . . . We are facing a critical time in the nation's history. Upon the fairness of taxing plans worked out will rest the success of today's recovery spending program. If that fails what shall follow—debt repudiation, inflation or political and financial collapse? There should be a complete revision of our tax laws. Taxes provide the greatest single contribution to the cost of living today. It makes no difference whether these taxes are paid in in the first instance by big business, industry, the public utilities, the railroads, the banks or the insurance companies, it is the ultimate consumer who pays them in the end. Whether taxes can be reduced immediately or not, they can and should be distributed more equitably and so as not to stifle business or to tax incentive which is the source of new industry and new employment."

In delivering an address on "National Fiscal Policies" before 1200 members and guests at the annual banquet of the National Chamber, Senator Pat Harrison, of Mississippi, chairman of the Senate Finance Committee said in part: "In 1928 the national income of our country was 84 billion dollars, in 1932 it dropped to 40 billion dollars. Our national income for 1938 was 62 billion dolars. We may differ as to the method to be employed in reaching that goal, but we are all agreed, I am sure, in the fond hope of

achieving an 80 billion dollar national income. There is one group of very conscientious Americans that subscribes to the philosophy that free and increased spending is the quickest and surest way to attain that goal. There is another group as conscientious, that believes in rational and sane economy in expenditures. When one realizes that our national debt has increased over 18½ billion dollars in six years, when our annual expenditures have climbed to a six-year average of over 7¾ billion dollars, when our annual receipts over the same period have averaged only 4½ billion dollars, one should know that it is time for the red light to be flashed on . . . Frankness compels me to admit that the difficult task of retrenchment in government expenditures cannot be accomplished without the active interest, encouragement, and support of the citizens of this country."

Produce More Newsprint

Production of newsprint in Canada during April, 1939, amounted to 220,843 tons and shipments to 214,255 tons, according to the News Print Service Bureau. Production in the United States was 77,393 tons and shipments 77,463 tons, making a total United States and Canadian news print production of 298,236 tons and shipments of 291,718 tons. During April, 23,398 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 321,634 tons. Total production in April, 1938, was 280,526 tons.

The Canadian mills produced 5 tons more in the first four months of 1939 than in the first four months of 1938. The output in the United States was 44,883 tons or seventeen and two-tenths per cent more than in the first four months of 1938, in Newfoundland 1,205 tons or one and three-tenths per cent more, making a total increase of 46,093 tons, or three and eight-tenths per cent.

Stocks of newsprint paper at the end of April were 212,500 tons at Canadian mills and 20,065 tons at United States mills, making a combined total of 232,565 tons compared with 226,047 tons on March 31, 1939. Some tonnage accumulated at water shipment points during the winter was still held back by the lateness of the opening of navigation on the St. Lawrence.

Bowaters Plan Extensive Improvements

The Bowater's Newfoundland Pulp and Paper Mills, Limited, of Corner Brook, Newfoundland, manufacturers of newsprint, has plans underway for extensive improvements to their local plant, recently acquired from the International Power and Paper Company, Limited. The plans include a one-story addition to the general office, new wood room, with increased capacity, new machine shop, and various minor improvements throughout the wood preparing department. Construction will begin as soon as navigation opens. Estimates of cost have not been announced.

As yet no announcement has been made regarding the proposed new sulphite mill, which, according to the Bowater-Newfoundland government agreement, will provide facilities for the production of an additional 30,000 tons of sulphite annually.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	83.9%	69.6%	90.3%	76.0%	70.5%	.....
April	82.8%	68.3%	92.1%	82.3%	70.0%	.....
May	.....	69.0%	90.6%	81.6%	69.4%	.....
June	.....	66.0%	87.3%	80.7%	72.3%	.....
July	.....	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	72.3%	80.6%	81.3%	70.5%	.....
First 18 weeks	81.6%	67.7%	90.6%	78.4%	68.9%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS, 1938	
April 1	86.2%	April 2	72.3%
April 8	83.9%	April 9	67.3%
April 15	81.2%	April 16	68.0%
April 22	82.2%	April 23	67.4%
April 29	84.0%	April 30	70.4%
May 6	82.4%	May 7	67.1%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	April 1, 1939	April 8, 1939	April 15, 1939	April 22, 1939	April 29, 1939	May 6, 1939
0% to 50%	51	54	54	56	54	37
51% to 100%	254	249	247	234	229	164
Total Mills Reporting	305	303	301	290	283	201

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	....	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%

Week end. April 1, 1939—74% Week end. April 22, 1939—69%
Week end. April 8, 1939—71% Week end. April 29, 1939—68%
Week end. Apr. 15, 1939—67% Week end. May 6, 1939—68%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted perodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

Estate of Harry P. Gould

[FROM OUR REGULAR CORRESPONDENT]

LYONS FALLS, N. Y., May 15, 1939—The estate of the late Harry P. Gould, formerly head of the Gould Paper Co., is appraised at $2,374,992.44, according to a certificate filed this week with the county surrogate. He died November 4 of last year. Stocks and bonds feature the estate items. Stocks lead the list at $1,279,901.57, of which the largest single item is a block of 14,207 shares of the Gould Paper Company valued at $852,420. Bonds are inventoried at $1,100,-242.92 inclusive of government bonds valued at $390,-000 and $142,000 in village and county obligations. Bank deposits aggregated $1,360,190.71; real estate located mainly in Lyons Falls $36,306.70; mortgages and notes held against others $29,094.38. The amount of the deductions and the net estate are not given. The widow and two sons, Gordon Gould and Henry R. Gould, all of Lyons Falls, N. Y., are the sole beneficiaries.

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ZINC SULPHIDE PIGMENTS IN PAPER

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Color in Paper*

By J. A. Van den Akker [1]

The annual production of paper in the United States is about thirteen million tons. Color is of importance in nearly all of the hundreds of different grades of paper comprising this huge output. Virtually all colors between deep blacks and the subtle tints of writing papers are found in going through all the classes of paper.

For a given kind of paper the potential range of colors, mainly as regards attainable saturation and brightness of color, depends markedly upon the pulp out of which the paper is made. The great bulk of paper is made from groundwood or mechanical pulp, and from the chemical pulps, in the preparation of which the fibers are removed from wood by chemical digestion. Two very important chemical pulps are kraft pulp (unbleached, and, in more recent times, bleached) and sulphite pulp (unbleached and bleached). A chemical pulp known as soda pulp finds wide application in printing papers, and, as is well known, writing papers of the highest grade are made from rag stock obtained by chemical cooking of shirt clippings and other textiles.

In order that a strong sheet of paper may be made, it is necessary that the fibers of the pulp be subjected to drastic mechanical action in the presence of water in a beater. The dye or other colorant and sizing materials are usually added to the pulp and set on the fibers during the beating operation. In this phase of papermaking considerable experience and skill are required, for poor judgment in the selection and estimation of weight of dyes results in production of paper of incorrect color, and such paper must be returned to the beaters as broke. Needless to say, an error resulting in curtailment of production is a costly one.

Color Control

The color of paper must be held within close limits. This afternoon we heard interesting talks on color tolerance. This subject is of considerable importance to the pulp and paper industry. While paper is a relatively inexpensive commodity, its nature is such that very slight differences in color may be perceived by an experienced observer. he surfaces of most papers are smooth, uniform, and flat; in making a color comparison, a sheet of one specimen is laid over part of another, and the comparison is made under a good level of illumination. The conditions for good visual discrimination are probably better satisfied in the color matching of paper than in the matching of color of any other material: In addition to the possibility of comparing under a high intensity of illumination, two uniform comparison fields separated by an almost insignificant line of demarcation are formed.

In most mills color is controlled through matching against material standards. In the typical case, the material standard is an actual sample of pulp or paper. The Groundwood Paper Manufacturers' Association has done an excellent piece of work in the development of a color book, which contains many standard samples of dyed groundwood papers. The standard colors are conveniently classified, and each color bears an arbitrary but definitive name. Thus the color book serves to standardize nomenclature as well as to preserve material standards of color.

There are three well-known sources of error in the control of color of manufactured goods of any sort by the traditional method of visual color matching, namely, personal errors, errors due to incorrect illuminant, and inconstancy of material standards. In view of these difficulties, the pulp and paper industry has been investigating objective means for measurement and control of color. In this country alone, there are of the order of one hundred photoelectric instruments in constant use for the control of color of both pulp and paper. This number is comprised mainly of those instruments which enable one to obtain reflectances for several, or for all, wavelengths of the visible spectrum. Recently the Technical Association of the Pulp and Paper Industry formulated standard procedures for obtaining and reporting color specification of pulp and paper. These procedures are based on spectrophotometry and the I.C.I.[2] system of color specification.

A spectrophotometric curve (spectral reflectance curve) is a plot of diffuse reflectance of the sample, in terms of percentage of reflectance of magnesium oxide, for all the wavelengths of the visible spectrum. Such curves for kraft, groundwood, unbleached sulphite, and bleached sulphite pulps are presented in Fig. 1. By way of explaining the meaning of a spectrophotometric curve in slightly more detail, we may

* A twelve-minute talk with exhibits given for the Technical Association of the Pulp and Paper Industry, as part of the popular session of the Inter-Society Color Council, "Color on Parade," held in the auditorium of the Electrical and Gas Association of New York, Inc., on the evening of February 23, 1939.

[1] Institute of Paper Chemistry, Appleton, Wis.

[2] The International Commission on Illumination. In 1931 this commission standardized upon all physical and psycho-physical data involved in the process of arriving at colorimetric data from spectral reflectance curves.

consider the curve for kraft pulp It will be seen that the reflectance of the sample of kraft pulp was 19.8 per cent for spectrum light (monochromatic) of wavelength 400 millimicrons (violet), and that the reflectance increased with increasing wavelength, passing through 34.5 per cent at 500 mmu (blue-green), 49.8 per cent at 600 mmu (orange), and 64.2 per cent at 700 mmu (red).

The curves for pulps are generally characterized by a relatively low reflectance in the violet and blue portions of the spectrum, with the lowest reflectance at 400 mmu, and a fairly rapid rise with increasing wavelengths to the highest reflectance at 700 mmu. Because of the similarity of shape of the curves for pulps of similar kind, it has been possible to characterize pulps with fair reliability by a single reflectance measurement in the blue portion of the spectrum, where changes in reflectance are greatest. Where pulps of similar kind, say sulphite, are compared, it is found to be a rule that the pulp is brighter and whiter when reflectance in the blue part of the spectrum is higher, and, conversely, less white and duller when this reflectance is lower. The large change in reflectance caused by the bleaching of sulphite pulp, particularly for the part of the spectrum between 400 and 500 mmu, should be noted. The bleaching of kraft and groundwood pulps causes similar changes in the respective curves. Several years ago the pulp and paper industry standardized the measurement of reflectance to blue light. In the United States, Canada, and abroad, there are more than sixty photoelectric instruments in use for this measurement. These instruments are all carefully calibrated and are maintained in accurate calibration to a common scale through a checking schedule involving monthly transmittal of recalibrated working standards and calibrated paper standards. The papermaker refers to this reflectance as "brightness." The technical men of the industry realize that "brightness"

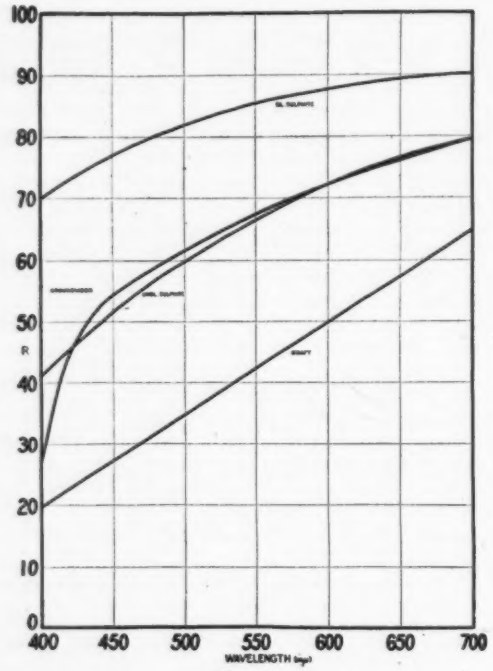

FIG. 1.

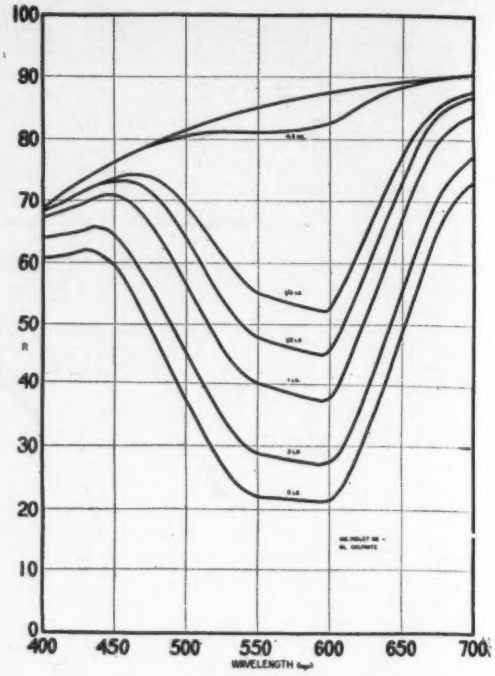

FIG. 2.

is not a complete designation of color; they have found, however, that this quantity can be quickly and easily obtained, and correlates well with pulp quality. This arbitrary though very useful quantity should not be confused with "brightness" as used in colorimetry (the latter is a measure of lightness or dullness and is variously referred to as "daylight reflectance" and "visual efficiency"); there is, of course, an approximate correlation between the two kinds of brightness. The photoelectric reflection meters used for the measurement of brightness are equipped with nine filters and may therefore be termed "abridged spectrophotometers." In a number of mills, these instruments are used to control color through curves determined by nine reflectances.

Influence of Dye on Spectral Reflectance

The influence of dye on spectral reflectance is illustrated in Fig. 2, in which are shown curves for bleached sulphite, and for bleached sulphite containing 0.2 oz., ¼ lb., ½ lb., 1 lb., 3 lb., and 5 lb. of methyl violet dye (Du Pont) per 1000 lb. of oven-dry stock[3]. A dye produces color through selective absorption of light, that is, more light is absorbed in one part of the spectrum than in another. In the case of methyl violet, the greatest absorption of light is for wavelengths in the region of 550 to 600 mmu. It will be seen that a significant change in spectral reflectance was produced in the 0.2 oz. dyeing. The lowering of the reflectance for light of wavelengths near 550 and 600 mmu produces a marked change in color from a bright cream color to a nearly neutral shade. Technically, the purity (or saturation) of the color is considerably reduced, the hue is shifted by a small amount toward the blue, and the visual efficiency is perceptibly diminished. In spite of the

[3] The data for Figures 2, 3, and 4 are taken from the doctoral dissertation of W. J. Foote. Part of this appeared in *Paper Trade J.* 108, no. 10:33-40 (March 9, 1939); the remainder will appear in a later issue of this journal.

reduction in visual efficiency, the lightly dyed paper would be described by most people as being distinctly whiter than the undyed paper. As the weight of dye increases, the color as seen in daylight progressively goes through a neutral color, then through light tints of blue, to deeper and more saturated shades of blue.

This succession of colors is illustrated in Fig. 3, in which the I.C.I. chromaticity diagram ("mixture diagram") is presented. The chromaticity of a color is expressed by dominant wavelength (hue) and purity (saturation) and does not depend upon visual efficiency (the measure of lightness and darkness). It is represented by a point on the diagram (x, y), where x and y are the trichromatic coefficients of the color on the I.C.I. system of color specification. The significance of chromaticity can be understood by considering that the color of a sample held under white light can be matched by shining a mixture of white light and pure spectrum light on an ideal white surface (in the case of purple samples, the spectrum light—green—must be mixed with the white light going to the sample). When the match is accomplished, the wavelength of the spectrum light is taken as the hue of the color (dominant wavelength) and the amount of spectrum light relative to the mixture of white light and spectrum light is associated with the purity of the color. The color is completely specified when, in addition to these two quantities describing chromaticity, the visual efficiency is given. The complete color specification may be obtained from the spectral reflectance curve. Colors of maximum possible purity are the spectrum colors; the chromaticities of these are located on the curve. The straight line connecting the two ends of the curve is the locus of most saturated purples (mixtures of spectrum light of wavelengths 400 and 700 mmu). The neutral point, for which purity is zero, is designated as C. This is the location on the diagram of the I.C.I. Illuminant C, the laboratory standard of average daylight (the chromaticities for dyed samples were computed for viewing by the I.C.I. standard observer under Illuminant C.) The dominant

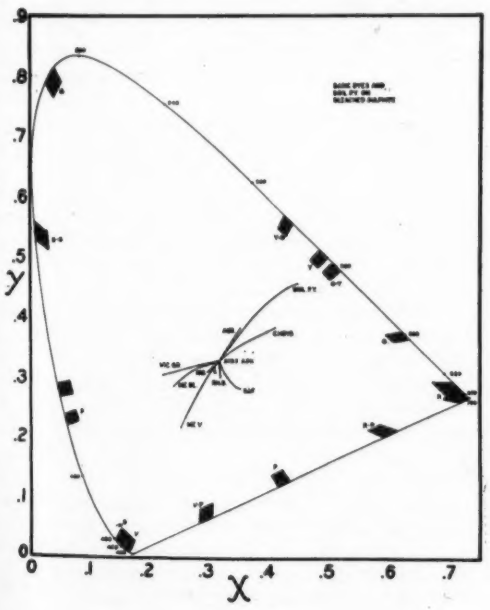

FIG. 3.

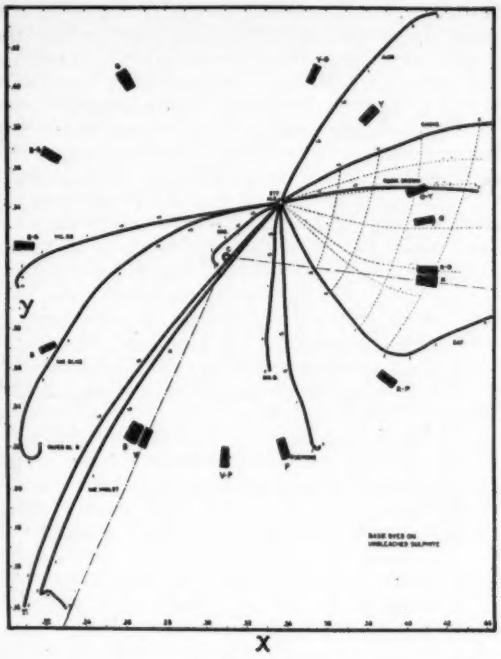

FIG. 4.

wavelength for any point on the diagram is found by constructing a straight line running from C through that point to the spectrum locus; the point of intersection with the spectrum locus gives the dominant wavelength. The purity is usually taken as the ratio of the distance between the point and C to the total distance from C to the locus, expressed in per cent.

The chromaticity of undyed bleached sulphite pulp is represented by the point from which the several curves radiate. The dominant wavelength is 575.5 mmu (yellow), and the purity is 5.5 per cent (quite perceptibly different from strictly neutral). When methyl violet dye is added, the chromaticity passes, for a certain light weight of dyeing, through the neutral point, and, as seen from the diagram, the purity then increases with increasing weight of dye, and the dominant wavelength shifts in the blue from longer to shorter wavelengths. Curves for ¼, ½, 1, 3, and 5 lb. weights of several other dyes (Rhodamine B, Safranine, Chrysoidine, brilliant paper yellow, Auramine, Victoria green, methylene blue, and Nigrosine) are given in order that one may gain an idea of the regime of ordinary weights of dyeings. The high tinctorial strength of brilliant paper yellow is clearly indicated. In the case of each dye, the visual efficiency decreases with increasing weight, and, to have a complete picture, one should have a family of curves giving this quantity against weight of dyeing.

The central part of the diagram is enlarged in Fig. 4, which presents chromaticities of various dyeings on unbleached sulphite. Points lying in the sector bounded by the dotted lines (which run to the two ends of the spectrum locus) are the purples (pinks, magentas, etc.). This diagram illustrates how the chromaticities of mixtures of two dyes may be charted. As one would expect, the chromaticity of a point lying in the area between two adjacent curves may be arrived at by employing a suitable mixture of the corresponding dyes. Thus a point lying between

the curves for Chrysoidine and Safranine could be obtained by mixture of these two dyes; if the point happened to lie between the curves for Safranine and basic brown, the chromaticity could also be obtained by a proper mixture of these dyes. In general, there are several combinations of two dyes which would give the same chromaticity. However, in spite of the fact that these double dyeings would have the same hue and purity, they would not have the same color, because they would be different in visual efficiency; one pair of dyes may result in a color of correct chromaticity but of insufficient lightness, while another pair may combine to form a color which is too light. From a colorimetric viewpoint, the choice of the proper pair of dyes must depend upon the third colorimetric quantity, the visual efficiency. For this purpose, one may use charts giving visual efficiency of double dyeings against the relative concentration of one of the dyes, for various total weights of the two dyes. The choice of the most suitable pair of dyes would be materially aided by direct reference to the spectral reflectance curves.

It has often been said that, to match a given color, one may adjust dye concentrations to obtain a spectral reflectance curve which would be coincident with that of the submitted sample. Such a match would be ideal, for it would hold good under all types of illuminants. Actually, an attempt should be made to select the proper types of dyes for the match by inspection of the spectral reflectance curves. It is possible to do this, for each dye changes spectral reflectance in characteristic fashion. However, it is generally not possible to obtain sufficiently exact coincidence of the curves in actual practice; the color of the pulp to be dyed is generally different from that of the pulp from which the submitted sample was made, and there are many factors such as color of the water used in the mill, constituents of the beater furnish, and many variables of the paper machine that will cause color changes. Therefore it is necessary to determine from the spectral reflectance curve the dominant wavelength, purity, and visual efficiency, and to compare these with the corresponding quantities for the submitted sample. The spectral reflectance curves may be different, but if these three quantities are correct, the match would be satisfactory to the I.C.I. standard observer viewing under the standard illuminant (I.C.I. Illuminant C is usually employed in the calculations). In view of these practical considerations, charts giving chromaticities and visual efficiencies for single and double dyeings should aid in solving color problems. While one should be warned against attempting to develop accurate dye formulae from charts of this sort, it may be said that waste due to poor first guesses may be reduced through a procedure involving both the direct use of spectral reflectance curves and colorimetric charts.

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Alkaline Process

Process for the Manufacture of Paper Materials. W. Weeks, Paris. Swed. pat. 89, 152 (Nov. 19, 1935). —Pine wood chips are first cooked with a dilute solution of caustic in the presence of a phosphate, then under the addition of a calcium or calcium magnesium paste, and finished cooking through the introduction of sulphur dioxide gas or sulphurous acid or sodium bisulphite solution. The material is then washed, resulting in a suitable pulp for newsprint.—J.F.O.

Heat Utilization in Sulfate Mills. Alb. E. Nielsen and K. Moerch. Papir-J. 26, no. 2:17-21; no. 6: 67-68; no. 10:119-127 (Jan. 31, March 31, May 31, 1938); B. I. P. C. 8:458.—The articles are polemical discussions of the problem of heat utilization in sulfate mills with reference to the efficiency of the different systems in use.—C.J.W.

Pulp Producing Process. The Cellulose Research Corp. Brit. pats. 478,953 and 478,944 (Jan. 24, 1938.—*No. 478,943*—In preparing highly reactive and permeable wood cellulose suitable for the manufacture of cellulose derivatives or paper by impregnating pieces of wood of suitable size with a delignifying solution under nondelignifying conditions and subjecting the wood to delignification, the wood is first brought into contact with an aqueous liquid heated to or above the boiling-point of water to displace the air in the wood by steam and the steam is then condensed to draw liquid into the interstices of the wood which is then subjected to uniform delignification with a delignifying liquor. The aqueous liquid may be the delignifying solution itself or, particularly in the case of an alkaline cooking process, a non-delignifying solution of specific concentration, e.g., hundredth molar sodium chloride or hundred-thousandth-molar aluminum sulphate. In a modification in which longer chips are used, the chips are submerged and boiled in water for about 30 min., the water (maintained at a vigorous boil) being then displaced from the bottom of the digester by means of superheated steam added above the liquor level; condensation of the steam by addition of treating liquor at below 100°C. then creates a vacuum which draws the lignifying liquor into the chips. In a modification, the chips may be impregnated with ammonium (or other) sulphite solution and sulphur dioxide subsequently added. *No. 478,944*—Highly purified reactive and permeable wood cellulose is prepared by producing or selecting a raw pulp obtained from wood by a relatively mild delignifying process that causes no substantial degradation of the cellulose, chlorinating with no more than the amount of chlorine that will promptly react with the constituents of the pulp, removing the chlorination products, bleaching with hypochlorite solution and then treating with an alkali solution of not less than 4 per cent strength under nonmercerizing conditions.—A.P.-C.

Control of Diffuser Washing in Sulphate Mills. Hilding Bergstroem and K. G. Trobeck. Svensk Papperstidn. 41, no. 11:352-354 (June 15, 1938); B. I. P. C. 8:493.—Pulp washing in diffusers in the sulfate mill is usually terminated when the discharging wash water shows 0° Be. irrespective of temperature. The authors show this practice to be incorrect, because the Baumé degrees are greatly influenced by temperature; the higher the temperature, the greater

the variations. It was also found that the percentage of dry content, alkali, and rosin acids (talloil) varies in samples taken from different diffusers, that their conductivity is not in ratio to these percentages and, therefore, cannot be used for the control of washing or determining the endpoint of the washing process. An accurate method for this purpose would be of great importance for the efficient recovery of alkali and the largest possible amount of liquid rosin, as well as for decreasing stream pollution. It is equally important that the washing period be regulated according to the size of the diffuser until the correct amount of dry substance is present in the wash water, and the process be neither continued too long, nor stopped too early.—C.J.W.

Black Liquors

Corrosion Characteristics in the Distillation of Fatty Acids from Kraft Pulp Manufacture. F. C. Vilbrandt and L. E. Ward, J. Trans. Electrochem. Soc. 73:111-123 (1938).—Stills for the recovery of saponified compounds produced during the digestion of paper pulp are preferably fabricated from stainless steels containing not less than 8 per cent of nickel and not less than 22 per cent of chromium. Addition of molybdenum allow the nickel and chromium contents to be reduced, an alloy containing 18 per cent chromium, 8 per cent nickel and 3 per cent molybdenum having excellent corrosion-resistant properties. Silicon neither retards nor accelerates the attack.—A.P.-C.

Fatty Acids from Pulp Mill Wastes. A. Pollak. Oil and Soap 15:33-34 (1938).—The composition and uses of täll oil and its derivatives are reviewed.—A.P.-C.

Process for the Recovery of Pulp from Raw Materials Containing Cellulose by the Alkaline and Neutral Processes. R. Hilpert, Braunschweig. Ger. pat. 651,732 (Jan. 5, 1933).—The carbon monoxide formed during the cooking process is continually removed under pressure with steam. In this manner the carbonic acid can be separated from the water before the decrease in pressure and led back into the digestor. This method gives an especially strong pulp.—J.F.O.

Process for Eliminating the Formation of Foam in the Precipitated Black Liquor in the Manufacture of Sulphate Pulp. E. Pyhala, Helsingfors. Finn. pat, 17,743 (Aug. 7, 1935).—Acid sodium sulphate or sulphuric acid or a mixture of these substances are added to the black liquor. The rosin and fatty acid sodium soaps present in the waste liquor in a mixture of free rosin and fatty acids thus prevent the formation of foam.—J.F.O.

Sulphite Process

Commercial Equipment in the Sulphite Industry. Hugo Lauber. Chem. App. 25, no. 11:169-172; no. 12:197-199 (June 7, 25, 1938); B. I. P. C. 8:471.—The author reviews installations for filling digesters, changes which have taken place in the shape of digesters with special reference to the bottom flange and constructions favoring the quick discharge of the pulp, the most important liquor circulating systems and equipment for multi-stage bleaching (Thorne, International Bleaching Corporation, Kamyr, etc., methods).—C.J.W.

The Importance of Determining the Sulfur Trioxide Content of Roasting Gases and a Suggestion for a Generally Applicable Method. H. Hiller. Z. Papier, Pappe, Zellulose u. Holzstoff 56, no. 10:133-5 (May 31, 1938); B. I. P. C. 8:452.—After reviewing the important existing methods in use and their respective shortcomings, the author describes his own method, chiefly for the quick control of a pyrites furnace. His method is essentially based on the apparatus employed by R. Kraus (Angew. Chem. 48:227-8 [1935]). By certain modifications and reduction of size of the apparatus, such as an intensive gas cooling system for the sulfur dioxide and a screw gas washing system according to Freidrich for the sulfur trioxide, he succeeds in obtaining results after 15 minutes.—C.J.W.

Production of Wood Pulp. Albert E. Nielsen. Brit. pat. 477,543 (Jan. 3, 1937).—In the production of wood pulp by the soda, sulphate or sulphite processes, the waste liquors from the digestion are concentrated by evaporation, brought to approximately the same strength of active ingredients as the initial liquor and used again. When the waste liquor becomes sufficiently concentrated in ligneous constituents, a part thereof is withdrawn, evaporated to dryness and the dry product is used as fuel for the production of steam.—A.P.-C.

Sulphite Cooking Process. Effect of Pretreatment of Spruce Wood on the Reaction. F. E. Brauns and D. S. Brown, Ind. Eng. Chem. 30:779-781 (July, 1938).—Cooking experiments with diazomethane-methylated wood confirmed the assumption that the hydroxyl group, which is methylated by diazomethane, plays the decisive role in the sulphite cooking process. Dissolution of the lignin in sodium bisulphite cooking seems to occur in two stages: (1) addition of sulphurous acid to the lignin complex forms the so-called solid ligninsulphonic acid; and (2) a rearrangement of the sulphonic group in the lignin complex with the participation of a hydroxyl group takes place, forming soluble ligninsulphonic acid. That at least part of the lignin is combined with carbohydrate in the wood was shown in a recent experiment in which a compound was isolated which is soluble in certain solvents, which does not reduce Fehling solution, and which, on hydrolysis with 72 per cent sulphuric acid, gives a lignin-like precipitate with 10.5 per cent methoxyl content, whereas the solution contains sugars strongly reducing to Fehling solution.—A.P.-C.

Process for the Manufacture of Pulp. A.B. Nordiska Armaturfabrikerna, Stockholm. Swed. pat. 88,907 (July 31, 1929).—The invention concerns a circulation system in which the relieving of the gases from the cooking liquid takes place in a separator, and the gases thus collected are returned to the digestor.—J.F.O.

Process for the Manufacture of Sodium Sulphite Pulp. Stora Kopparbergslags A.B., Falun. Swed. pat. 90,128 (May 26, 1934).—Instead of, as in the main patent 87,098; to the smelt resulting from the burning of the waste liquor, sodium bicarbonate is added in quantities at least equivalent to the sodium sulphide content; a smaller amount of sodium bicarbonate is added to the smelt at the beginning of the process.—J.F.O.

Process for the Manufacture of Sodium Sulphite Pulp. Stora Kopparbergslags A.B., Falun. Swed. pat. 90,129 (May 26, 1934).—Only so much water is added to the salt mixture that a part remains undissolved; instead of a different amount as in the main patent, 87,098.—J.F.O.

Pulp Bleaching*

By Donald T. Jackson[1] and John L. Parsons[1]

Abstract

A critical review of developments during the period November 1937—November 1938.

Recent articles on the bleaching of wood pulps have shown that the bleaching process should be considered as a continuation of the stepwise isolation and purification of wood cellulose begun in the digestion process *(37)*. More and more we are realizing that these two processes must be considered in relation to each other and must be adapted to the raw fibrous material with which we start and to the type of bleached pulp which we desire. Multiple stage bleaching, either by a continuous or a batch process, the first stage of which is a chlorination treatment, is recognized today as constituting modern bleaching practice. During the past year several general articles *(38)*, *(26)*, *(40)*, *(12)*, *(39)* covering pulp bleaching have appeared and special mention should be made of the contributions by Rue *(2)* and Kraft *(13)*.

Within recent years the entire bleaching process has been subjected to a critical analysis which should result in a better understanding of the chemistry of the various stages involved and their control. In general it can be stated that during bleaching operations two reactions are desired and two are undesirable: (a) the removal of ligneous material and (b) the destruction of the coloring matter. Reactions such as (c) the chemical interaction between the bleaching agent and the dissolved materials from the fibers and (d) a destructive attack on the cellulose are not desired.

Increased attention has been given to an alkaline extraction of the pulp and to the washing of the fibers, between stages and especially after the final stage. Even double washing is recommended after the chlorination stage, the caustic extraction stage, and the final hypochlorite stage. Thus, these operations bring about a greater removal of the dissolved organic materials and repress the undesirable reaction (c), mentioned above. A soaking and a thorough washing of the pulp after the final stage tend to prevent color reversion, a subject to which there have been several references during the period under review.

According to the Institute of Paper Chemistry *(42)* differences observed in the bleaching of sulphite and sulphate pulps (acid and alkaline cooking) may be traced to the simultaneous removal of secondary wall lignin and middle lamellar lignin by the sulphite process, and to the preferential removal by the sulphate process of the middle lamellar lignin leaving a portion of the secondary wall lignin in the fibers to be removed by the bleaching process.

Chlorination Stage

It is customary to speak of the treatment of the pulp with elementary chlorine as a chlorination stage whether the chlorination is added as the liquid, the gas, or dissolved in water. Numerous papers have been published attempting to clarify the reactions that occur when elementary chlorine is added to an aqueous suspension of pulp fibers. Despite the considerable amount of research which has been done on the subject, investigators do not entirely agree as to exactly what happens during the chlorination process.

The work of Muller and Stadler *(1)* on the chlorination of plant substances has given some information on the nature of the reaction. They found that it was possible to chlorinate almost all of the different substances normally occurring in a plant, sugars, lignins, pentosans, as well as tannic, gallic and similar acids. They also found that the relative amounts of chlorine taken up by the various components varied greatly, from as much as 31 per cent for spruce lignin to 45 per cent for pyrocatechol. About half of the spruce chlorolignin was dissolved after cold digestion with sodium hydroxide. Although they worked with the plant substances which had not been subjected to any cooking process, the results probably are indicative of the behavior of similar materials in a pulp.

A study of the effects of chlorine and calcium hypochlorite on thin sections of wood cooked by the sulphite process was made by Bixler *(14)*. He showed that the lignin, both intercellular and cell wall, which remained after the cooking process, was removed by the chlorine or hypochlorite. Thus, it was concluded that bleaching is a continuation of the purification begun in the cooking process, and that it completes the removal of those ligneous portions of the fiber that the partial delignification in the digester has not removed. It seems probable that the cooking process removes the intercellular, and part of the secondary wall lignin; the function of the bleaching is to complete the removal of the latter.

Rue *(2)*, Carmody and Mears *(3)*, and Phelps and Schuber *(4)* have discussed in detail the physical properties of chlorine with relation to its behavior in aqueous solution at different pH values. The values which they give for ionization constants are based on the earlier works of Jakowkin *(5)* and they are in essential agreement. They have also calculated the proportion of the various active forms of chlorine: molecular chlorine, hypochlorous acid, and hypochlorite ion, which exist in equilibrium under the various pH conditions. The results are in good agreement, although in one case the temperature for which the distribution was calculated was not given *(3)*. Below pH 2.0 active chlorine is present in the elementary state and above pH 2.0 the amount of hypochlorous acid increases until it reaches a maximum near a pH of 5.0. Above pH 5.0 the amount of hypochlorite ion increases rapidly until about pH 8.0 where practically all of the active chlorine is present as hypochlorite. The reactions which occur when elementary chlorine is added (either as the gas or dissolved in water) to the pulp suspension are discussed at considerable length by these authors.

Phelps and Schuber *(4)* have expressed the opinion that below a pH of 2.0 the chlorine reacts with

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the lignin in the pulp to an appreciable extent through addition to the double bonds of the lignin complex, and above this acidity largely by substitution. Rue *(2)*, however, states, "Chlorination by addition, in all probability, is lacking."

Kraft *(13)* has written that ten minutes after the addition of chlorine the consumption is 80 to 85 per cent. More than 50 per cent of this amount appears as hydrochloric acid. Furthermore, that in acid solution, addition and substitution reactions predominate.

Carmody and Mears *(3)* have studied the course of the chlorination reactions and, from a mathematical analysis of the data of Hisey and Koon *(6)*, believe that there are two separate reactions occurring, a very rapid first order reaction between the chlorine and the "active lignin" and a much slower reaction of the second order in which the "inactive lignin" is the principal factor. They have checked their conclusions by a series of experiments. Unfortunately, however, the published data are so meager that it is not possible to follow the entire method. The introduction of the terms "active" and "inactive" lignin is difficult to justify.

Rue *(2)* has advocated the forcing of the initial chlorination reaction by adding considerable excess of chlorine and then, after a few minutes reaction time, the acid condition is abruptly shifted to a pH of 8 or above by the addition of lime. The remainder of the chlorine is consumed under alkaline conditions. This process would seem to permit considerable oxidation of those incrustants which have been solubilized by the acid chlorination. The author also suggested that the temperature of chlorination be raised when treating sulphate pulps in order to speed up the reaction. According to Phelps and Schuber *(4)* the line tends to fix a more or less insoluble, difficultly bleachable, lime chlorolignin on the fibers. This observation has been confirmed by investigators at the Forest Products Laboratory *(24)* who found that calcium hydroxide was the least efficient of several alkaline substances for dissolving chlorinated lignin.

Schmidt-Nielson *(7)* and coworkers at the Norwegian Technical College carefully investigated the reaction between active chlorine and the impurities in sulphate pulp over a wide range of alkalinity and acidity. They used a somewhat different technique from that used by other investigators. Working with carefully buffered pulp suspensions, they made small scale multiple stage bleaches (20 grams pulp) and followed the consumption of the bleaching agent by the change in oxidation potential as measured by a platinum electrode permanently mounted in the reaction mixture. The pH was measured by a similarly mounted glass electrode. Thus they were able to closely follow the reaction without producing any change in the concentrations of reactants through sampling. Sodium hypochlorite was used as the source of available chlorine in all stages and at all pH values. When this reagent was introduced into an acid solution (for example at pH 2.0), they believed the reaction was essentially that which would have taken place had gaseous chlorine been introduced at the same acidity. It was stated by the author that the reaction below pH 2.0 was chiefly chlorination to produce easily soluble products which collect on the fiber and prevent further consumption of chlorine. Above pH 4.5 the reaction is essentially one of oxidation. The shortest bleaching time with least consumption of chlorine for a given color, as well as the best fiber strength, was given by the bleaches wherein about half of the bleach demand was supplied for the first stage and in which the bleaching took place in this stage at a pH below 2.0.

Fotiev *(8)* has discussed in considerable detail the chemistry of chlorine bleaching and attempted to explain certain facts from the Freudenberg formula for lignin. Fotiev expressed the belief that only hydrogen atoms in the position para to the methoxy group (in Freudenberg's formula) are likely to be substituted by chlorine; the other hydrogens both in the nucleus and side chain are less reactive. If this assumption is correct one would expect a maximum of eleven chlorine atoms for each lignin residue of about 1800 molecular weight. This appears to be appreciably less than the sixteen chlorine atoms for each 870 unit molecular weight of lignin postulated by Carmody and Mears *(3)*. The author apparently was not familiar with the work of Brauns *(9)* who found that by methylating one hydroxyl in the lignin of unbleached pulp the product would react little, if at all, with chlorine. It is difficult to see how this result could be explained if the reaction is as suggested by Fotiev.

Fotiev further believes that the lignin molecule is broken into smaller units by oxidation of the aliphatic portion by means of hypochlorous acid. The smaller units are easily dissolved by alkali. Results of experimental work wherein the author has attempted to determine the relative proportion of the active chlorine consumed by chlorination and by oxidation under different experimental conditions are also shown.

Loeschbrandt *(10)* has reported the results of experiments carried out at the Norwegian Research Institute on the bleaching of sulphate pulp. It was established that each pulp has an optimum degree of chlorination at which point the maximum purification with the most economical utilization of chlorine is obtained. An excess of chlorine will not damage the fibers but will react further with the already chlorinated impurities resulting in a waste of chlorine. However, if chlorine greatly in excess of the amount which is able to react with the impurities is added, degradation of the cellulose will occur. This statement is in agreement with Kraft *(13)* who also adds that high temperatures and long chlorination periods are to be avoided.

The bleaching of sulphate pulp, especially pulp from pine wood, has been investigated by Schmid *(12)* and by Rosenberg and Laube *(11)*, who reported on work done at the Russian Paper Institute. The latter worked with native and imported kraft pulps of varying degrees of hardness. The pulps were chlorinated by several methods and with various proportions of chlorine. They concluded that the best procedure was to allow from 4 to 11 per cent (basis of pulp) of elementary chlorine to react with the pulp for 15 to 30 minutes and then to add 125 per cent of lime (based on chlorine) and allow the reaction to proceed until the chlorine is exhausted. Schmid has surveyed the bleaching of pine sulphate pulp and concluded that the pulp suffers little, if any, loss of strength when chlorinated with about 70 per cent of the bleach demand at 3 per cent pulp consistency. He pointed out that some sulphate pulps can safely use up to 100 per cent of the bleach de-

mand (by Bergman number) of the pulp.

Campbell and Rolleston *(20)*, *(21)* have described a vacuum bleaching process in which pulp (especially kraft pulp) at 35 to 50 per cent consistency is placed in a container and the air pumped out until a vacuum of about 28 inches of mercury is reached. The desired amount of chlorine gas is then introduced, allowed to react and the excess removed with the vacuum pump. The pulp may then be treated in any other way desired. The authors claim more rapid and efficient utilization of the chlorine with less hydrochloric acid formation and a decreased attack on the fibers.

Kraft *(13)* has summarized the results of many years experience with commercial bleaching of sulphite and sulphate pulps in Canada and the United States. Lignin removal is best brought about in acid solution where substitution and addition reactions predominate. About 70 per cent of the consumed chlorine is transformed into hydrochloric acid which does not harm the pulp as long as a large chlorine excess, high temperatures, and long reaction time are avoided. About 90 per cent of the chlorine required by the chlorine number can be added in the chlorination stage.

Patents describing numerous, and often apparently contradictory, principles and processes of chlorinating pulp are constantly appearing. Among the patents which seek to improve the utilization of the chlorine and at the same time to minimize the attack on the fiber may be mentioned those of Textor *(15)*, Extrom and Martin *(16)*, Sconce *(17)*, and Casciani *(18)*. The Textor patent describes an apparatus for the chlorination of pulp whereby the tendency for the chlorine gas to escape is decreased while at the same time the power requirements for circulation of the stock are also decreased by a lowered stock velocity. Extrom and Martin have developed a method in which lime is continuously added to the pulp immediately following the continuous but separate addition of chlorine in the gaseous state. Claim is made for a more efficient utilization of the added chlorine through the continuous removal, by solution in the added alkali, of the reaction products of the chlorination.

The patent of Sconce is essentially a modification of the earlier patent of Rue *(19)* wherein an excess of chlorine is added and after a few minutes reaction the pulp mixture containing the unreacted chlorine is made alkaline with lime and the chlorine utilized as hypochlorite. The patent of Casciani refers to what is essentially a two stage chlorination process in which the chlorine in the first stage is allowed to substantially exhaust under acid conditions. After washing the pulp, additional chlorine is added, allowed to react for a short time in the acid condition, and then the excess chlorine is converted to hypochlorite by the addition of either caustic soda or lime. This stage may be followed by a conventional hypochlorite bleach.

Pomilio *(23)* treats slightly moistened "crumbs" of kraft or other pulp containing large amounts of lignin at relatively high pulp consistency with chlorine gas. The chlorinated pulp is then washed, extracted with alkali or sodium bisulphite, and the bleaching finished in the usual way.

Alkaline Treatment

Numerous workers have investigated the alkaline treatment of the pulp during and following the chlorination stage and there appears to be little agreement as to the most advantageous procedure to follow. Some have advocated the use of lime towards the end of the chlorination period in the bleaching of sulphate pulp in order to bring about a greater absorption of the chlorine. Following the chlorination stage it appears to be the general practice to wash out the dissolved chlorinated products and then to subject the pulp to an alkaline extraction to remove as far as possible additional chlorinated products, insoluble in water but soluble in alkali. These incrusting organic materials are capable of readily consuming the bleaching agent used in subsequent stages and represent a direct loss if allowed to remain with the pulp.

There appears to be a general agreement that during the chlorination stage a portion of the lignin is rendered soluble in the dilute hydrochloric acid solution produced by the chlorination. There also is general agreement that a very considerable portion of the remaining chlorinated material on the fibers can be dissolved or dispersed by proper treatment with alkali. There is, however, a considerable difference of opinion as to what alkali is best for this treatment and the conditions under which it can best be employed. Naturally the conditions will vary somewhat depending on the type of pulp to be treated and the degree of purification desired.

Kraft *(13)* and others recommend a thorough washing of the chlorinated pulp, before neutralization, in order to remove the acid liquor with its dissolved impurities. Other investigators, notably Rue *(2)*, Rosenberg and Laube *(11)*, and Sconce *(17)* state that in the case of sulphate pulps lime should be added to the chlorination stage following the initially rapid consumption of chlorine by the pulp. The addition of lime sufficient in quantity to neutralize the acid solution and to raise the pH to 8 or above, gives an improved utilization of the chlorine and a superior pulp. They advocate a subsequent treatment with hot caustic soda (1 per cent on the pulp) at 20-25 deg. C. to remove any remaining chlorinated or oxidized products.

Casciani *(18)* modified this process by subjecting the partially chlorinated pulp from a first stage acid chlorination to a second chlorination stage in which, after a short reaction time, the acid condition is abruptly shifted by the addition of lime or sodium hydroxide. The chlorine is then allowed to exhaust at a pH above 7.0. Extrom and Martin *(16)* add lime continuously to the pulp suspension, which is receiving chlorine gas at the same time, sufficient to maintain the solution at a pH between 4 and 8. They claim the chlorine reacts first with the incrustants in the pulp rather than with the lime and the latter serves to neutralize the acid formed and to remove from the fibers the products of chlorination or oxidation.

The reasons advanced for adding alkali to the chlorination stage following a brief chlorination period are the desire to neutralize the acid formed by the reaction before it can have a harmful effect on the fibers, to make soluble the products of chlorination which tend to slow up the reaction by adhering to and protecting the fibers and thus to permit a rapid and more complete utilization of the added chlorine, and to obviate the necessity of installing acid resistant equipment for pulp washing and handling.

Recent investigations, as well as practical experience in the mill, have demonstrated that fears of fiber degradation by the hydrochloric acid formed under the conditions prevailing in usual bleaching operations are largely unfounded. Kraft *(13)*, Schmid *(12)*, Loeschbrandt *(10)*, and Phelps and Schuber *(4)* have shown that there is little degradation of the cellulose unless the temperature is too high and the chlorination period abnormally long. Hagglund *(37)* asserts that the hydrochloric acid formed during chlorination of the pulp does not result in a higher alkali solubility. The assumption that the acid has any marked hydrolyzing effect on the cellulose seems hardly justified. Parsons and Jackson *(28)* have permitted sulphite and sulphate pulps, experimentally chlorinated with 70 to 80 per cent of the total available chlorine demand, to stand in the acid liquors (pH 1.5-3.0) for more than 100 hours without the fibers showing any significant decrease in strength properties.

In this connection, the recent patents on the use of chlorites in pulp bleaching *(29)*, *(30)*, *(43)* reveal that although the pulp is subjected to a temperature of 60-80 deg. C. for several hours in a solution of pH 3 to 4 there is no weakening of the fiber and the bleached pulps have strength properties approximately unchanged from those of the unbleached pulp.

As to the second reason, there appears to be no clear cut experimental evidence as to just how effectively the weakly alkaline solution, at the comparatively low temperatures existing during chlorination, exerts a solvent action on the products of chlorination. The investigations of Phelps and Schuber *(4)* and Arnold, Simmons and Curran *(24)* indicate the probability of the formation of an insoluble, difficultly bleachable lime-chlorolignin complex when calcium hydroxide is used for neutralization. It should be noted in passing that from a practical standpoint, the alkali used for alkalizing the chlorination liquors must necessarily be lime, since the cost of neutralizing the free acid with any other alkali would be prohibitive. That the rate of consumption of the remaining chlorine is accelerated greatly when the solution is made alkaline cannot be questioned. However, to what extent the chlorine consumption represents useful bleaching and to what extent the bleaching agent is consumed through secondary reactions with the previously solubilized incrustants has not been answered.

It is true that neutralization of the chlorinated pulp prior to washing permits the use of less expensive washing and pulp handling equipment.

Arnold, Simmons and Curran *(24)* have compared quantitatively five different alkalies in aqueous solution as to their efficiency in dissolving chlorinated lignin in sulphate pulp. Sodium hydroxide was most effective and the chlorinated lignins were found to be more soluble in the alkaline solution at 60 deg. C. than at 25 deg. C. The alkaline extraction removes a fraction of chlorinated lignin that is insoluble in cold water and in hot ethyl alcohol. Calcium hydroxide was the least efficient alkali among those investigated for dissolving the chlorinated lignin from sulphate pulp. It appears that the calcium hydroxide forms a difficultly soluble complex with the chlorinated lignin. Sodium carbonate, ammonium hydroxide and sodium metasilicate were approximately equal in their solvent action and came between sodium hydroxide and calcium hydroxide with relation to the amount of chlorinated lignin removed.

Phelps and Schuber *(4)* have investigated the use of calcium hydroxide and of sodium hydroxide and are convinced that the addition of lime "either to neutralize chlorinated pulp in its liquor, or as a reactant in the extraction stage proper, precipitates insoluble lime salts in and on the chlorinated fiber. The amount of insoluble lime precipitate increases markedly as the pH value of the chlorinated liquor rises above neutrality." They have shown that this precipitate has a very high bleach demand (up to 160 per cent) and that it was impossible to bleach beyond a light yellow color. The authors recommend the use of from 0.5 to 1.0 per cent caustic soda (basis oven dry pulp) for sulphite pulps and up to 1.5 per cent for kraft pulps at a temperature of 110-120 deg. F. and a pulp density of 15 per cent.

The work of Schmidt, Shera and Toovey *(25)* has established the facts that for West Coast hemlock sulphite and sulphate pulps an extraction with caustic soda in an intermediate stage improved the color, maintained or increased the alpha cellulose content and gave superior folding endurance, tear and mullen strength tests for the bleached pulp. They used a caustic soda concentration of from 0.5 to 2 per cent (basis pulp) at a pulp density of from 8 to 15 per cent, and temperatures from 77 to 180 deg. F.

It is also the opinion of Kraft *(13)* that sodium hydroxide is more effective than calcium hydroxide in removing chlorinated lignin. Loeschbrandt *(10)* advocates the use of approximately 2.5 per cent (basis of pulp) sodium hydroxide for the treatment of sulphate pulps. Rys and Boenisch *(26)* say that the alpha cellulose content of a pulp is decreased by extraction with calcium hydroxide.

Parsons and Jackson *(27)* have shown that the treatment of a chlorinated sulphite pulp with 0.5 per cent sodium hydroxide at 50 deg. C. and 10 per cent pulp consistency appreciably lowered the amount of bleach required for succeeding stages. At the same time the quality of the bleached pulp was improved.

Jayme *(44)* adds an emulsifier to the pulp at low density during an alkaline treatment with caustic soda. Then the mixture is brought to a higher consistency and held at an elevated temperature for the completion of the treatment, after which the pulp is thoroughly washed. The treatment is especially designed to remove coloring matter from the pulp.

Hypochlorite Bleaching

Despite our long familiarity with the hypochlorite pulp bleaching process, especially by the single stage method, our understanding of the mechanism of the process is far from complete and results of new investigations in this field are constantly being published. It does appear to be generally common knowledge that hypochlorite solutions react with lignin or lignin derivatives, dyes and other fiber impurities principally by oxidation. These materials are thereby rendered colorless and to a considerable extent made soluble. With improper control the oxidation reaction may proceed further to attack the cellulose. This degradation is reflected in inferior fiber properties.

In a multiple stage bleaching process, according to Rue *(2)* the earlier stages have removed ligneous products which are rendered soluble by chlorination, chlorinated materials insoluble in water but soluble

in alkali (alkali extraction stage) and to a certain extent dyes which are difficult to bleach but are soluble in alkali. Colored compounds still remain in the pulp, however, as it comes to the hypochlorite stage.

Work of Staudinger and Jurisch

Staudinger and Jurisch *(41)* have shown that during the oxidation of cellulose the following reactions may occur simultaneously but any one may be promoted, the removal of impurities, anhydro-glucose groups in the cellulose may be altered without decreasing the length of the molecular chains, and the molecular chains may be broken producing two or more smaller atomic groups. Oxidation of cellulose always results in a lower degree of polymerization, according to these authors. This can be measured by determining the viscosity of a solution of the cellulose in cuprammonium hydroxide. Thus, the degree of polymerization of cellulose decreases rapidly when the concentration of the bleaching agent, either chlorine water or calcium hypochlorite, is increased. With chlorine dioxide as a bleaching agent the decrease in degree of polymerization is very much less than with any other oxidizing agent investigated. Hydrogen peroxide in acid solution also produces little change in cellulose polymerization; in alkaline solution, however, the attack is more pronounced. From the works of Staudinger and others it is apparent that the degree of degradation of cellulose by a bleaching agent can be followed by measuring the viscosity of the pulp solution in a suitable solvent, such as cuprammonium hydroxide.

Alkaline Medium Desired

Numerous investigators have shown that significant bleach damage occurs to the fibers when the bleach solution is near the neutral point, pH 7. Because of the fact that the available chlorine should be present chiefly in the form of hypochlorite ion in hypochlorite bleaching, the reaction should occur in an alkaline medium, in the neighborhood of pH 9. Kraft *(13)* states that the partially bleached and purified fibers entering the hypochlorite stage are quite susceptible to attack and therefore the minimum amount of bleaching agent should be added. In the case of sulphate pulp the hypochlorite treatment is often split into two stages, a high density intermediate bleach followed by a caustic extraction and then a final bleach. In the high density stage only one-half of the reaction products are soluble in the bleach liquor; the remaining half is for the most part dissolved in the subsequent alkali treatment. For the bleaching of sulphate pulp Kraft advocates the use of approximately two per cent of available chlorine in the form of hypochlorite.

Observations of Rue

According to Rue *(2)* the rate of chlorine consumption in the hypochlorite stage for sulphite pulp is about doubled for each 7½ deg. C. rise in temperature. Normal bleaching temperatures in this country for low density stock range from 35 deg. to 40 deg. C. Above 40 deg. C. there is danger of chlorate formation and loss of available chlorine. With high consistency stock the temperature should be lower. At 15 per cent pulp density a temperature of 25 deg. C. is probably near the maximum. Where hypochlorite bleaching in a multiple stage process is divided into two stages, the final stage should contain only a small amount of hypochlorite, probably considerably less than one per cent based on pulp weight. High temperature, consistent with a minimum attack on the cellulose, and low stock density are favored conditions for the final hypochlorite stage.

In his study on the effect of digestion on wood structure, Bixler *(14)* has noted that calcium hypochlorite apparently exerts a more drastic action on the cambial walls than chlorine followed by a sodium hydroxide wash. Parsons and Jackson *(27)* observed that degradation of the fibers varies with the amount of hypochlorite used in bleaching, the less the hypochlorite the less is the attack on the fibers. As Rue *(2)* has well stated, "in view of the small quantity of impurity to be removed and the high degree of reactivity of the colloidal cellulose at this stage in its purification, special care is required in the control of the conditions of the reaction." Summarizing, these conditions are concentration of hypochlorite in the bleach solution, alkalinity of the solution, temperature, and pulp consistency.

Stability of Calcium Hypochlorite

The stability of calcium hypochlorite solutions has been investigated by Connor *(45)* who found that of the more common metal salts likely to be present, ferric chloride brings about a rather rapid decomposition of the hypochlorite. So long as air is not introduced into the solution an alkalinity of 0.25 gram calcium oxide per liter is adequate to maintain stability. In hypochlorite solutions of higher alkalinity neither the carbonate nor the hydroxide concentrations changed appreciably on exposure to air.

Phelps and Schuber *(4)* claim that by the addition of a considerable quantity of sodium hydroxide near the end of the high density hypochlorite stage in a four stage bleaching process an effect is produced similar to a five stage process. Sulphate pulp of unusual quality is produced by this system. In other words, these investigators combine the caustic extraction with their high density hypochlorite stage, thus eliminating the installation of considerable pulp handling equipment. Thus a five stage bleaching system would be reduced to four stages: chlorination, caustic extraction, high density hypochlorite combined with caustic extraction, and low density hypochlorite.

Schmid *(12)* has pointed out that there is a greater hydration of the cellulose and a greater possibility of weakening the fiber when the bleaching is carried out at higher pulp densities. The author adds that Thorne, and other bleaching authorities, believe the circulation or agitation of the pulp during hypochlorite bleaching is largely unnecessary and, besides being power consuming, may be actually harmful to the pulp. Schmid, however, is of the opinion that the hypochlorite is unable to penetrate uniformly into the interior of the fiber by diffusion alone but must be given mechanical aid. He places considerable emphasis upon the importance of cooking sulphate pulp so as to avoid the introduction of iron compounds which become fixed upon the fiber and are very difficult to remove by bleaching. Skinner *(38)* also mentions the possibility of the formation of difficultly bleachable iron compounds.

The recommendation has been made by Sunesson *(48)* to reverse the usual combination of bleaching stages for the bleaching of pulp obtained by alkaline cooking. Hypochlorite is added in the first bleaching stage and chlorine in the second stage. An ex-

traction with sodium hydroxide follows the second stage.

Bragg *(49)* has been granted a patent covering a catalytic hypochlorite bleaching process wherein titanium salts, in which the valence of the titanium is less than four, are used. The claim is made that the process effects an instantaneous bleaching and also produces a purer product with greater economy than ordinary hypochlorite bleaching processes.

The effect of buffering sodium hypochlorite liquors with sodium bicarbonate, as advocated by Minajev, Gurjanow, and Klemin *(46)* has been investigated by Wasser *(47)*. He demonstrated that the bicarbonate buffered hypochlorite maintained a practically constant pH at 8.3 throughout the entire bleaching period; the whiteness produced was inferior and the fiber deterioration greater than for an unbuffered alkaline hypochlorite bleach which started at a pH of 9.6.

In an article entitled "Degradation of Sulphate Fiber by Bleaching" Scribner *(52)* has shown how some envelope paper made of partially bleached sulphate fiber deteriorated very rapidly over a storage period of one and one-half years. This inferior lot of "kraft" envelopes possessed the characteristic buff or manila color of semibleached sulphate. The article is concerned exclusively with the aging properties of this type of poorly bleached fiber but with respect to fully bleached sulphate pulp Scribner states, "It is known that very stable fully bleached fibers of high strength can be produced by correct treatment of sulphate pulp."

Seborg, Simmonds and Baird *(53)* have reported that bleaching lowers the hygroscopicity of pulp, the greatest reduction occurring with a slight bleaching treatment. Additional bleaching, within limits, lowers the hygroscopicity but not proportionately as great.

Other Bleaching Agents

Among the chlorine compounds used as bleaching agents the chlorite have recently come into prominence. Several patents covering the use of chlorites or chlorine dioxide in bleaching have appeared *(29)*, *(30)*, *(43)*. This bleaching process is suited both to sulphite and sulphate pulps and can be used under acid or alkaline conditions. Thus far the information concerning chlorites as bleaching agents is confined to the patent literature.

Hydrogen peroxide *(50)* has also been applied particularly as a final or flash bleaching agent to pulp in the form of a web or sheet. The bleaching occurs as the pulp is dried on steam heated driers, yielding a bleached product which is claimed to be more permanent in color and yields a better white. The entire process is stated to be flexible and easily controlled.

Hirschkind and others *(51)* have investigated the bleaching effect of ultra violet light in the presence of hypochlorous acid solutions. Wave lengths from 350 to 385 millimicrons are considered to be the best for the purpose. Claims are made for pulps of superior color and free from degradation when irradiated with this restricted band of light. Ultra violet light of this wave length is of little effect on chlorine or hypochlorite solutions.

Pulp Washing

The importance of proper washing of the pulp to remove the dissolved products both at the conclusion of the intermediate bleaching stages and at the end of the final stage is only now beginning to be fully realized. Kraft *(13)* recommends a double wash after the chlorination stage, the alkali extraction stage and the final hypochlorite stage. Rue *(2)* states, "for effective removal of impurities from the fibers, therefore, a soaking period is essential and should be located between two rapid washes." Following the first wash of the pulp from the final stage several investigators treat the fibers with chlorine water, hydrochloric acid or sulphurous acid to reduce the pH to slightly below 7, and finally subject the suspension to a second washing treatment *(2)*, *(4)*, *(13)*. The consumption of water amounts to approximately 250-300 cubic meters (66,000-79,000 gal.) per ton of pulp.

Attention has been drawn by Rue *(2)* to the fact that a bleached pulp must be thoroughly cleansed of impurities by washing if there is to be no color reversion. Prelinger *(33)* has made a detailed study of the washing of bleached pulp and concluded that the permanency of color is directly related to the amount of soluble, oxidizable materials remaining with the pulp.

Tongren *(34)* working with what appears to be a somewhat over-bleached sulphite pulp (alpha-cellulose 80.8 per cent, copper number 3.16) found that extraction of the pulp with hot caustic caused a significant decrease in the rate at which the bleached pulp discolored. The presence of soluble bleach residues was believed to be responsible for the accelerated rate of discoloration of the original pulp.

Washing Agent

The use of chemically purified water for the washing of bleached sulphite pulp is suggested by Fogelberg *(36)* who found that the use of return water from the bleached pulp washers, either alone or mixed with fresh water, adversely affected the whiteness of the pulp.

A patent has been granted to the Uddeholms Abtiebolag *(22)* providing for the use of chlorine water instead of water to wash the pulp at the end of hypochlorite or similar oxidizing stages.

Mehlo *(35)* has prepared a flow sheet showing the water consumption in a four stage bleaching process: chlorination, alkali extraction, high density hypochlorite, and low density hypochlorite. The water consumption, calculated as gallons per ton of pulp (oven-dry basis), is distributed as follows:

Gals. Water Entering Process		Stages	Gal. Waste Water	Pulp Consistency per cent
Fresh	Other			
1510		1. Chlorinator		3.5
9620		Washer	14820	
3200	and Alkali Soln.			15
		2. Alkali extraction		5
2040				3.5
9620		Washer	15100	
				18
	264 Bleach Liquor	3. Bleach Tower		15
3180	3220 White Water			3
	9620 White Water	Washer	15600	
				12
1440	and Bleach Liquor	4. Bleacher		7
	4570 White Water			3
9620		Washer	15980	
				15
16900		Tank Wet machine	17400 (recovered white water, used as indicated above)	22

Summary: 57,300 gal. fresh water and 17,400 gal. bleacher white water (from wet machine) used in process. Waste water amounted to 61,600 gal. Calculations based on one ton of pulp (oven-dry basis). These figures are probably typical of good European practice in multi-stage bleaching.

Several Methods Reported

Several methods for the determination of the relative or actual amounts of incrusting materials removed by the different stages of bleaching and washing processes have been reported *(31), (27), (25), (32), (33).* Samuelson *(31)* determined the amount of hypochlorite consumed by the liquor under definite conditions. Parsons and Jackson *(27)* estimated the total dissolved material by evaporation of a definite volume of the liquor and the organic matter by low temperature ignition of the residue. They also determined the "easily oxidizable" material by an acid permanganate oxidation under definite conditions of temperature and concentration of reagents. Schmidt, Shera and Toovey *(25)* made use of a permanganate oxidation to determine a value, the so-called "K" number, which was considered to be indicative of the dissolved incrustants in the liquor sample. Later Schmidt *(32)* extended the investigation and proposed the term "Incrustant Number" for the cubic centimeters of 0.10-N potassium permanganate consumed under definite conditions of time and temperature by the dissolved oxidizable materials in the liquor associated with one gram of air dry pulp. Prelinger *(33)* made use of the high temperature (170 deg. C.) oxidation of the dissolved organic material by potassium iodate and sulphuric acid. He proposes the term "Oxygen Number," i.e., the number of milligrams of oxygen required for complete combustion, to carbon dioxide and water, of the organic matter present in 100 cc. of the fiber-free liquor. His methods appear to give good results when applied to the oxidation of materials which have received essentially similar previous treatment.

It should be remembered that the values obtained by any chemical method involving oxidation reflect only the comparative amounts of oxygen consuming materials which are capable of reacting with the reagent under the existing condition. Any effort to translate these values into weights of dissolved organic matter, or to compare oxidation values obtained on materials which have previously received widely different treatment, are bound to lead to confusion. Parsons and Jackson *(27)* determined the cubic centimeters of I—N permanganate required to react with the solution containing one gram of organic material and found that the requirement varied from 29 cc. for the already partially oxidized organic matter dissolved at the end of a second stage hypochlorite bleach, to 84 cc. for the organic matter dissolved in an acid chlorination liquor.

Open to Several Objections

The method for determining the "Incrustant Number" proposed by Schmidt *(32)* appears to be open to several objections, particularly if the values so obtained are used to determine relative efficiency of incrustant removal in different purification stages. First of all the permanganate oxidation is permitted to take place at the pH of the sample which may be strongly alkaline, neutral or acidic. It is well known that the amount of permanganate consumed in oxidation varies greatly with the alkalinity or acidity of the solution. Secondly, the author recommends the removal of oxidizing or reducing materials present, for example, sulphurous acid or residual hypochlorite, by boiling the solutions. That further chemical reaction will occur, particularly if any appreciable amount of the reagent is present cannot be doubted. The subsequent permanganate oxidation will measure not the amount of oxidizable material originally present but the amount which has resisted the preliminary boiling treatment.

In a recent article by Warrick and McKee *(54)* the report is made that the average fiber concentration of bleach washer wastes amounts to 0.71 pound per 1000 gallons. In mills with modern bleaching plants with vacuum filter washers this fiber waste is reduced considerably, according to a survey conducted by these authors.

Literature Cited

(1) Muller, O. A., and Stadler, F., *Papier-Fabr.* 35, 8-14 (1937); 36, 81-93, 405-11 (1938).
(2) Rue, J. D., *Trans. Electrochem. Soc.* 73, 137-52 (1938).
(3) Carmody, W. D., and Mears, J. S., *Paper Trade J.* 106, TAPPI Sect. 292-94 (May 19, 1938).
(4) Phelps, M. W., and Schuber, J., *Paper Trade J.* 106, TAPPI Sect. 81-84 (Feb. 24, 1938).
(5) Jakowin, A. A., *Zeit. phys. chem.* 29, 613 (1899).
(6) Hisey, W. O., and Koon, C. M., *Paper Trade J.* 103, TAPPI Sect. 86-93 (Aug. 6, 1936).
(7) Schmidt-Nielsen, S., *Papir-J.* 26, 83-85, 94-95 (April 20, 30, 1938).
(8) Fotiev, S. A., *Bumazh. Prom.* 4, (1938). Pulp and Paper Mag. Can. 39, 749-52 (Oct. 1938).
(9) Brauns, F. E., *Paper Trade J.* 103, TAPPI Sect. 72-75 (July 30, 1936).
(10) Loeschbrandt, F., *Finnish Paper Timber J.* 20, 668-671 (Sept. 15, 1938).
(11) Rosenberg, N. A., and Laube, A. G., *Zellstoff u. Papier* 17, 534-38 (Dec. 1937).
(12) Schmid, W., *Papier-Fabr.* 36, 137-38 (Mar. 4, 1938).
(13) Kraft, F., *Papier-Fabr.* 36, 429-36 (Oct. 14, 1938).
(14) Bixler, A. L. M., *Paper Trade J.* 107, TAPPI Sect. 179 (Oct. 13, 1938).
(15) Textor, C. K., U. S. Patent 2,130,402 (Sept. 20, 1938).
(16) Extrom, J. A., and Martin, H., U. S. Patent 2,101,706 (Dec. 7, 1937).
(17) Sconce, J. S., U. S. Patent 2,098,111 (Nov. 2, 1937).
(18) Casciani, F., U. S. Patent 2,127,765 (Aug. 23, 1938).
(19) Rue, J. D., U. S. Patent 2,001,268 (May 14, 1935).
(20) Campbell, J., and Rolleston, L. O., *Paper Trade J.* 105, TAPPI Sect. 276 (Oct. 28, 1937).
(21) Campbell, J., and Rolleston, L. O., U. S. Patent 2,089,992 (Aug. 17, 1937).
(22) Uddeholms Abtiebolag., German Patent 654,991 (Jan. 6, 1938).
(23) Pomilio, U., British Patent 487,701 (Jan. 24, 1938).
(24) Arnold, G. C., Simmonds, F. A., and Curran, C. E., *Paper Trade J.* 107, TAPPI Sect. 98-102 (Sept. 8, 1938).
(25) Schmidt, G. E., Shera, B. L., and Toovey, T. W., *Paper Trade J.* 106, TAPPI Sect. 284-87 (May 12, 1938).
(26) Rys, L., and Boenisch, A., *Zellstoff u. Papier* 18, 573-84 (Oct. 1938).
(27) Parsons, J. L., and Jackson, D. T., *Paper Trade J.* 107, 165-68 (Oct. 6, 1938).
(28) Parsons, J. L., and Jackson, D. T., Unpublished data.
(29) Taylor, M. C., and White, J. F., U. S. Patent 2,100,496 (Nov. 30, 1937).
(30) Parsons, J. L., and Jackson, D. T., U. S. Patent 2,120,678 (June 14, 1938).
(31) Samuelson, S., *Proc. Tech. Sect. Paper Maker's Assoc. G. Brit. & Ireland*, 17, 293-337 (March, 1937).
(32) Schmidt, G. E., *Pacific Pulp Paper Ind.* 12, No. 6, 33-40 (June, 1938).
(33) Prelinger, H., *Paper Trade J.* 107, TAPPI Sect. 121-26, 262 (Sept. 15; Dec. 8, 1938).
(34) Tongren, J. C., *Paper Trade J.* 107, TAPPI Sect. 76-84 (Aug. 25, 1938).
(35) Mehlo, R., *Papier-Fabr.* 36, 441-43 (Oct. 21, 1938).
(36) Fogelberg, H., *Finnish Paper Timber J.* 19, 514-16, 536, 538-40, 542 (1937).
(37) Hagglund, E., *Finnish Paper Timber J.* 20, No. 15a, 4-6, 8-10, 12 (Aug. 15, 1938).
(38) Skinner, H. J., *Ind. Eng. Chem.* 30, 318-20 (March. 1938).
(39) Lewis, H. F., *Paper Trade J.* 107, TAPPI Sect. 254-55 (Dec. 8, 1938).
(40) Rys, L., and Boenisch, A., *Zellstoff u. Papier* 18, 9-12 (Jan., 1938).
(41) Staudinger, H., and Jurisch, J., *Papier-Fabr.* 35, 462-69 (Dec. 3, 1937).
(42) Institute Paper Chemistry, Staff Report. *Paper Trade J.* 105, TAPPI Sect. 375-76 (Dec. 30, 1937).
(43) Vincent, G. P., U. S. Patent 2,129,719 (Sept. 13, 1938).
(44) Jayme, G., U. S. Patent 2,074,473 (Mar. 23, 1937).
(45) Connor, C. M., *Paper Trade J.* 107, TAPPI Sect. 106-08 (Sept. 8, 1938).
(46) Gurjanow, L. W. and Klemin, N. G., *Chloptschatobumashnaja Prom.*, 5, 21-23 (1937).
(47) Wasser, H., *Textilber.*, 18, 225-26 (1937).
(48) Sunesson, E. B. F., U. S. Patent 2,140,863 (Dec. 20, 1938).
(49) Bragg, A. O., U. S. Patent 2,119,519 (June 7, 1938).
(50) Heritage, C. C., U. S. Patent 2,125,634 (Aug. 2, 1938).
(51) Hirschkind, W., Pye, D. J., and Thompson, E. G., *Paper Trade J.* 105, TAPPI Sect. 268-69 (Oct. 28, 1937).
(52) Scribner, B. W., *Paper Ind.* 19, 1279-80 (Feb. 1938).
(53) Seborg, C. O., Simmons, F. A., and Baird, P. K., *Paper Trade J.* 107, TAPPI Sect. 223 (Nov. 10, 1938).
(54) Warrick, L. F., and McKee, F. J., *Paper Trade J.* 107, TAPPI Sect. 261 (Dec. 8, 1938).

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Pagel Horton & Co., Inc., *Consul Corfitzon,* Gefle, 250 bls. sulphite, 50 tons.
——, *Consul Corfitzon,* Gefle, 500 bls. sulphite, 100 tons.
Central Hanover Bank Trust Co., *Consul Corfitzon,* Hernosand, 600 bls. sulphite, 100 tons.
——, *Consul Corfitzon,* Hernosand, 600 bls. sulphite, 100 tons.
——, *Consul Corfitzon,* Stocka, 2,400 bls. sulphite, 400 tons.
Bank of New York, *New York,* Hamburg, 250 bls. wood pulp, 50 tons.
The Borregaard Co., Inc., *Stavangerfjord,* Sarpsborg, 108 bls. unbleached sulphite.
Pulp Sales Corp., *Mormacsea,* Helsingfors, 254 bls. sulphate, 50 tons.
Pulp Sales Corp., *Mormacsea,* Kasko, 1,470 bls. sulphite, 294 tons; 4,685 bls. sulphate, 937 tons.
M. Sone, *Mormacsea,* Gdynia, 300 bls. wood pulp, 50 tons.
Pulp Sales Corp., *Tunaholm,* Viipuri, 875 bls. mechanically ground pulp.
Perkins Goodwin & Co., *Tunaholm,* Gothenburg, 112 bls. sulphate.
Pulp Specialties, Inc., *Tunaholm,* Gothenburg, 392 bls. sulphate.
Bulkley Dunton Pulp Co., Inc., *Tunaholm,* ——, 1,200 bls. sulphite.
Pulp Sales Corp., *Mathilda Thorden,* Kotka, 125 bls. woodpulp.

WOOD PULP BOARDS

H. Fuchs & Son, *Drottningholm,* Gothenburg, 7 crates.
Salwen Paper Co., *Drottningholm,* Gothenburg, 83 bls.
Jay Madden Corp., *Tunaholm,* Kotka, 79 rolls, 32 tons.
Salwen Paper Co., *Tunaholm,* Gothenburg, 53 bls.
Standard Fibre Specialty Co., *Tunaholm,* Gothenburg, 43 bls.
Security Fur Seal Co., *Tunaholm,* Gothenburg, 22 bls.
Fibre Products Manfg. Co., *Washington,* Hamburg, 30 bls.

ALBANY IMPORTS

WEEK ENDING MAY 13, 1939

Gottesman & Co., Inc., *Consul Corfitzon,* Hernosand, 900 bls. sulphite, 150 tons.
Pagel Horton & Co., Inc., *Consul Corfitzon,* Gefle, 500 bls. sulphate, 101 tons; 9,575 bls. sulphite, 1,233 tons.
——, *Consul Corfitzon,* Gefle, 2,225 bls. sulphite, 431 tons.
Price & Pierce, Ltd., *Consul Corfitzon,* Gefle, 600 bls. bleached sulphite, 101 tons.
Tradesmans National Bank Trust Co., *Consul Corfitzon,* Norrsundet, 1,500 bls. sulphate, 345 tons.
——, *Consul Corfitzon,* Norrsundet, 2,750 bls. sulphite, 550 tons.
Bank of New York, *Consul Corfitzon,* Hernosand, 1,800 bls. sulphite, 300 tons.
——, *Consul Corfitzon,* Hernosand, 300 bls. sulphite, 50 tons.
Parsons & Whittemore, Inc., *Tortugas,* ——, 250 bls. wood pulp.

WILMINGTON IMPORTS

WEEK ENDING MAY 13, 1939

——, *Korsholm,* Kopmanholman, 2,900 bls. wood pulp.
Price & Pierce, Ltd., *Korsholm,* Kopmanholman, 125 bls. unbleached mechanical, 2,250 bls. bleached sulphite, 5,550 bls. unbleached sulphite.
Bulkley Dunton Pulp Co., Inc., *Mormacsea,* ——, 300 bls. wood pulp, 50 tons.
Pulp Sales Corp., *Mormacsea,* Rauma, 5,640 bls. sulphite, 972 tons.
Jay Madden Corp., *Mormacsea,* Helsingfors, 132 rolls newsprint, 1,344 rolls woodpulp boards, 156 tons.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 13, 1939

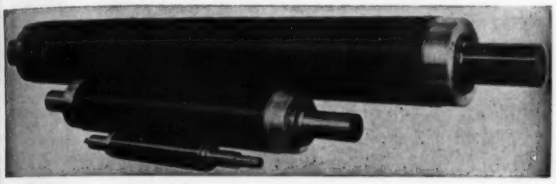
Gottesman & Co., Inc., *Tunaholm,* Gothenburg, 1,115 bls. sulphate.
Gottesman & Co., Inc., *Tunaholm,* Stockholm, 2,500 bls. sulphite.
Castle & Overton, Inc., *Collamer,* Havre, 150 bls. bagging.
E. J. Keller Co., Inc., *Collamer,* ——, 62 bls. bagging.
Castle & Overton, Inc., *Mormacsea,* Helsingfors, 657 bls. unbleached sulphite, 128 tons.
Pulp Sales Corp., *Mormacsea,* Helsingfors, 305 bls. sulphite, 61 tons; 260 bls. mechanical pulp, 52 tons.
Neidich Process Co., *Mormacsea,* Helsingfors, 75 bbls. tissue paper.
Jay Madden Corp., *Tunaholm,* Helsingfors, 364 rolls newsprint.
Pulp Sales Corp., *Tunaholm,* Viipuri, 2,313 bls. sulphite.
Wilkinson Bros., & Co., Inc., *Tunaholm,* Kotka, 162 rolls newsprint.
J. W. Hampton, Jr. & Co., Inc., *Tunaholm,* Kotka, 438 rolls newsprint, 28 bls. printing paper.
Paper House of Penna., *Tunaholm,* Kotka, 25 bls. printing paper.
Pulp Sales Corp., *Tunaholm,* Kotka, 210 bls. sulphite.
Perkins Goodwin & Co., *Tunaholm,* Gothenburg, 927 bls. sulphate.
The Borregaard Co., Inc., *Tunaholm,* Gothenburg, 125 bls. bleached wood pulp.
——, *Tunaholm,* Gothenburg, 35 rolls wrapping paper.
Paper House of Penna., *Tunaholm,* Gothenburg, 21 bls., 6 cs. paper.
Parsons & Whittemore, Inc., *Tunaholm,* Gothenburg, 78 rolls newsprint.
Castle & Overton, Inc., *Tunaholm,* Gothenburg, 299 bls. sulphate.
Bulkley Dunton Pulp Co., Inc., *Tunaholm,* ——, 432 bls. sulphate, 150 bls. sulphite.
A. H. Morner, *Tunaholm,* Stockholm, 329 bdls. wall board.
Price & Pierce, Ltd., *Scanmail,* ——, 120 bls. bleached sulphite.

BALTIMORE IMPORTS

WEEK ENDING MAY 13, 1939

Gottesman & Co., Inc., *Tunaholm,* Gothenburg, 435 bls. wood pulp.
——, *Korsholm,* Kopmanholman, 125 bls. mechanical pulp, 3,550 bls. sulphate, 975 bls. sulphite, 510 bls. chemical pulp, 596 bdls. wall board.
Congoleum Nairn Co., *Estrella,* Marseilles, 786 bls. rags.
Congoleum Nairn Co., *Collamer,* Havre, 1,165 bls. rags.
Pulp Sales Corp., *Tunaholm,* Helsingfors, 520 bls. mechanically ground pulp.
Pulp Sales Corp., *Tunaholm,* Viipuri, 337 bls. wood pulp.
F. H. Shallus Co., *Tunaholm,* Kotka, 141 rolls newsprint.
Pulp Sales Corp., *Tunaholm,* Kotka, 1,855 bls. sulphite, 2,750 bls. sulphate.
Perkins Goodwin & Co., *Tunaholm,* Gothenburg, 169 bls. sulphate.
The Borregaard Co., Inc., *Tunaholm,* Gothenburg, 175 bls. wood pulp.
Parsons & Whittemore, Inc., *Tunaholm,* Gothenburg, 264 rolls newsprint.
Nolan Bowmall & Co., Inc., *Tunaholm,* Gothenburg, 245 rolls newsprint.
M. Sone, *Tunaholm,* Gothenburg, 965 bls. wood pulp.
Central Hanover Bank Trust Co., *Tunaholm,* Gothenburg, 610 bls. wood pulp.
Bulkley Dunton Pulp Co., Inc., *Tunaholm,* ——, 508 bls. sulphate.
Price & Pierce, Ltd., *Blankaholm,* ——, 1,290 bls. unbleached sulphite.
Pulp Sales Corp., *Mathilda Thorden,* Helsingfors, 1,412 bls. sulphite.
Pulp Sales Corp., *Mathilda Thorden,* Viipuri, 1,470 bls. sulphate.
Jay Madden Corp., *Mathilda Thorden,* Kotka, 1,204 rolls newsprint.
Parsons & Whittemore, Inc., *Mathilda Thorden,* Tallinn, 1,700 bls. unbleached sulphite.

Built to fit production requirements and to meet operating conditions . . Appleton Calender Rolls show greater resistance to wear . . give longer life . . and provide the most efficient and most economical roll performance . . Built by THE APPLETON MACHINE COMPANY • Appleton • Wisconsin.



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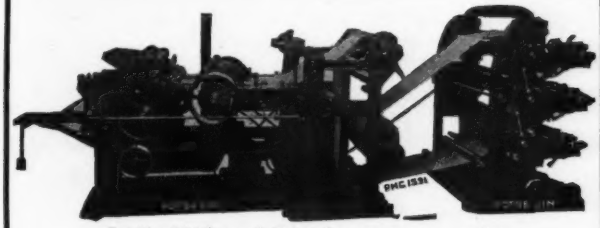
"CENTURY LINE"
PAPER BAG MACHINES

A profitable way for PAPER MILLS to move kraft paper.



Combined high-speed, flat and square grocery, notion, specialty bag machine and multi-size, multi-color Aniline web printing press. One of 5 machines.

The POTDEVIN "Century Line" paper bag machines are simple to operate, compact and efficient. They are preferred because of such desirable features as POTDEVIN-patented vertical drum delivery, quick changeover, elimination of all tapes, high speeds and low maintenance costs.

Plain or aniline printed, there is an extensive market for the great variety of bags made on these machines.

Details and prices sent on request.

POTDEVIN MACHINE CO.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, May 17, 1939.

Business in the wholesale paper market continues at a good level for the current week. Reports from many manufacturers' representatives, jobbers, and general paper merchants, indicate volume is approximately the same as for the preceding week. The trend in the wholesale paper trade is apparently headed upward, as is also general wholesale trade. Seasonal declines in employment and payrolls for April are reported in New York State.

The index of general business activity for the week ended May 6 declined to 86.3 per cent from 86.7 per cent for the previous week, compared with 76.3 per cent for the corresponding week last year. Automobile production, electric power output, carloadings (other than miscellaneous) and paper production were a little lower.

Production of over 200 paper mills for the week ended May 6 was estimated at 82.4 per cent, compared with 84.0 per cent for the previous week, and with 67.1 per cent for the corresponding period last year. Paper board production stood at 68.0 per cent for the week ended May 6, compared with the same figure for the previous week, and with 57.0 per cent for the like period last year.

The newsprint situation is reported as unchanged for the week. The trend in advertising in the immediate future is apparently not favorable for any substantial increase in newspaper advertising linage. No important change in the current rate of consumption is expected in the trade in the near future. The dual price of $48 to $50 per ton prevails, while European newsprint is being offered as low as $43 per ton. Regardless of the quantity of this imported newsprint, which is regarded as subsidized imports, or dumping in some quarters of the trade, the effect is generally viewed as depressing to the domestic and Canadian newsprint industries.

Sales volume for many grades of paper continues to be reported at a relatively good level this week. Sulphite bond papers in the medium and lower qualities are reported as good. The demand for book papers is reported as showing little change for the week. The demand for tissue papers continues good. Sales volume of kraft papers continues good with production well balanced against orders. The inventory situation is satisfactory with dealer inventories reported generally at the minimum. Prices are relatively firm and unchanged at representative market quotations.

The production of paper board continues good and while demand in some grades is reported as a little lower for the week, consumer demand is conceded to be at a good level.

Mechanical Pulp

No important change in demand or prices has been reported in mechanical pulp for the week. Production continues at a good level and prices remain firm and unchanged at quotations which have prevailed for some months.

Chemical Pulp

Consumption of chemical pulp continues at a good level, with no important change in demand or prices reported for the current week. Government relief for the pulp manufacturers in this country is regarded as essential, as the domestic wood pulp industry cannot compete with subsidized competition from abroad because of the higher wages and standard of living of American labor.

Old Rope and Bagging

The old rope market continues to be reported as quiet, with mill buying limited to regular sources of supply. No change in prices have been reported to date, except on jute threads which are higher this week and currently quoted at from $3.00 to $3.25. Transactions in old bagging are reported of fair volume, with prices holding steady on all grades.

Rags

All white rags are reported as firm for the week. No important change has been reported to date in any grade of paper making rags, except on O.D. Khaki cuttings, which are lower this week and currently quoted at from $3.25 to $3.40.

Old Waste Paper

Little change has been reported in the old waste paper market for this week. Prices hold to prevailing levels. While lower prices on several grades are looked for in some quarters of the trade, no change has been reported to date, except on white ledger stock which is a little lower and currently quoted at from $1.05 to $1.15.

Twine

Transactions in the twine market are reported as of good volume for this week. Prices hold firm and continue unchanged at prevailing market quotations.

Marvellum Box Papers

The Marvellum Company, Holyoke, Mass., have just issued a series of booklets containing samples of the company's attractive box coverings. Book No. 870 includes Silray (silver) papers; No. 903, Wood panel papers; No. 913, Rayon papers, corbel design; No. 914, Cretonne papers, daisy design; No. 918, Cretonne papers, fir tree design; No. 931, Cretonne papers, holly design; No. 967, Embrite papers, knobby pattern; No. 979, Embrite papers, driftwood pattern; and No. 985, Cretonne papers, tiling design.

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Perforated Screens
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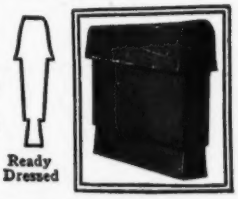

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Are Made By

H. WATERBURY & SONS CO.
ORISKANY, NEW YORK

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, May 17, 1939.

BLANC FIXE—Quotations on blanc fixe continue firm and conform to prevailing market levels. The pulp is offered at from $42.50 to $45 per ton, in bulk; the powder is quoted at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Prices on bleaching powder continue firm and unchanged at prevailing market quotations. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported as good for the current week. Standard domestic casein, 20-30 mesh, is quoted at from 7¾ to 8 cents per pound; 80-100 mesh, at from 8½ to 9 cents per pound. All prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda remain unchanged at prevailing market levels. Solid caustic soda is currently quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay continue firm and conform to prevailing market quotations. Imported clay is offered at from $13 to $25 per ton, ship side. Domestic filler clay is currently quoted at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—Quotations on chlorine remain firm and continue unchanged at prevailing market prices. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The demand for rosin is reported as good for the current week and prices on some grades are a little higher. "G" gum rosin is quoted at $4.80; "FF" wood rosin at $4.15, per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.69 per 100 pounds, f.o.b shipping point.

SALT CAKE—Quotations on salt cake continue firm and unchanged at prevailing market prices. Quotations range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported saltcake is offered at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Prices on soda ash continue firm and conform to prevailing market quotations. Prices on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The demand for corn starch is reported as relatively good for the current week. Quotations are relatively firm and unchanged at prevailing market levels. Globe pearl is currently quoted at $2.60 per 100 pounds; special paper starch is offered at $2.70 per 100 pounds. All prices in bags, car lot quantities, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are reported as firm and unchanged at prevailing market levels. The commercial grades are quoted at $1.15; iron free at $1.30, per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Prices on sulphur are relatively firm and conform to prevailing market prices. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Quotations on talc continue firm and unchanged at prevailing market levels. Domestic talc is quoted at from $15 to $18 per ton, f.o.b., mines. Imported talc is offered at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	$0.82½	@	—
White No. 1 M. G.	.80	@	—
White No. 1½	.67½	@	—
White No. 2			
Anti-Tarnish M. G.	.65	@	—
Colored	.77½	@	—
Kraft	.65	@	—
Manila			
Unbl. Toilet, 1 M.	2.65	@	—
Bleached Toilet	5.26	@	—
Paper Towels—Per Case			
Unbleached, Jr.	$1.75	@	—
Bleached Jr.	3.10	@	—
Manila—per cwt.—C. l. f. a			
No. 1 Jute	7.75	@	9.75
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	30.00	@	32.50
Chip	30.00	@	32.50
Sgl. Mla. Lt. Chip.	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated.	55.00	@	57.50
Kraft Liners	45.00	@	—
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1.	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	@ 36.50	32.20	@ 37.75
85% Rag			29.90	@ 35.00
75% Rag	23.60	@ 27.75	24.75	@ 29.00
65% Rag			21.65	@ 26.25
50% Rag	17.55	@ 21.50	18.70	@ 22.75
25% Rag	14.65	@ 17.75	15.80	@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.60	@ $10.50	$9.75	@ $12.00
No. 2	7.70	@ 9.50	8.90	@ 10.75
No. 3	6.85	@ 8.25	8.00	@ 9.75
No. 4	7.00	@ 8.50	8.20	@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.30	@	$12.75
No. 2 Glossy Coated	9.70	@	11.00
No. 3 Glossy Coated	8.60	@	10.00
No. 4 Glossy Coated	6.05	@	9.25
No. 1 Antique (watermarked)	8.05	@	9.25
No. 2 Offset	7.45	@	8.50
A Grade E. F.	7.20	@	8.25
A Grade S. & S. C.	7.45	@	8.50
B Grade E. F.	6.65	@	7.75
B Grade S. & S. C.	6.90	@	8.00
C Grade E. F.	6.40	@	7.50
C Grade S. & S. C.	6.65	@	7.75
D Grade E. F.	6.10	@	7.00
D Grade S. & S. C.	6.35	@	7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	25.00	@	26.00
Dry	25.00	@	28.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	31.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.25	@	2.75
Prime Qualities—Easy-Bleaching Sulphite	1.90	@	2.00
Strong Unbleached Sulphite	1.80	@	1.95
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.60	@	1.75
Kraft No. 1	1.45	@	1.60
Kraft No. 2	1.35	@	1.40
(F. o. b. Pulp Mill)			
Kraft Domestic	1.25	@	1.75
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, does charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	7.00	@	7.25
Silesias No. 1	4.50	@	4.75
New Unbleached	6.75	@	7.00
Blue Overall	4.90	@	5.00
Fancy	1.75	@	2.00
Washables	1.50	@	1.60
Mixed Khaki Cuttings	2.25	@	2.50
O. D. Khaki Cuttings	3.25	@	3.40

Old Rags

White, No. 1—			
Repacked	2.90	@	3.15
Miscellaneous	2.10	@	2.25
White, No. 2—			
Repacked	1.50	@	1.60
Miscellaneous	1.25	@	1.40
Thirds and Blues—			
Repacked	1.30	@	1.40
Miscellaneous	1.15	@	1.20
Roonng Rags—			
No. 1	1.05	@	1.10
No. 2	.90	@	.95
No. 3 (bagging)	.55	@	.65
No. 4	.60	@	.65
No. 5A	.60	@	.65

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.30
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

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HIGH GRADE COATED BOOK

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KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT CYLINDER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

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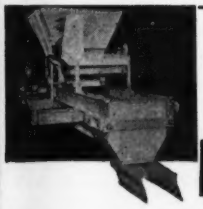
Lake, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina



FEEDOWEIGHT

for accurate feeding of salt cake and other materials. Also weighs and totalizes the weight.

Send for Bulletin #388

MERRICK SCALE MFG. CO.
PASSAIC, NEW JERSEY

CLINTON STARCHES

Special Grades for Beater and Top Sizing

Manufactured by
CLINTON COMPANY
CLINTON, IOWA

QUALITY SERVICE

PULP MILL MACH'Y FINISHING ROOM MACH'Y
— FRICTION CLUTCHES —

The MOORE & WHITE Co.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

LANGSTON SLITTERS AND ROLL WINDERS

make firmer rolls—

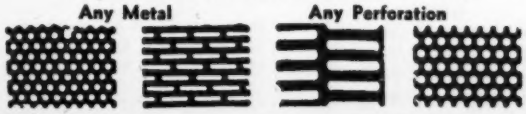
Samuel M. Langston Co., *Camden, N. J.*

Pulp and Paper Mill Screens

Of Stainless Steel—Copper—Bronze—Monel—
Chemical Resisting Alloys

Perforations that are accurate in size

Any Metal Any Perforation



The Harrington & King PERFORATING CO.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.75	@	1.90
Domestic	1.75	@	1.80
Wool Tares, light...	1.60	@	1.70
Wool Tares, heavy..	1.80	@	1.90
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	2.60	@	2.75
Domestic	2.75	@	3.00
Jute Threads.....	3.00	@	3.25
Sisal Strings	1.50	@	1.60
Mixed Strings....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag	.70	@	.75
Solid Flat Book...	.55	@	.60
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.05	@	1.15
Ledger Stock Colored	.60	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine—			
Compressed bales.	.65	@	.70
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.40	@	.45
Strictly Folded....	.37½	@	.42½
No. 1 Mixed Paper..	.17½	@	.22½

Twines

(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.12¾	@	.14¼
White Hemp.....	.13¾	@	.15¼
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¼	@	.12½
Wall Paper.....	.10¼	@	.12½
Wrapping	.12	@	—
Soft Fiber Rope...	.12	@	.14
Cotton	.16	@	.19
(Hard Fiber)			
Medium Java.....	.11	lb	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

Domestic	2.65	@	2.75
Sisal Rope	1.75	@	1.85
Mixed Rope.....	.50	@	.60
Transmission Rope...	1.90	@	2.00
Soft Jute Rope	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.50	@	1.65
Domestic	1.40	@	1.50
Bleachery Burlap....	2.50	@	2.70
Scrap Burlap—			
Foreign	1.35	@	1.40
Domestic	1.25	@	1.40
Scrap Sisal.....	1.65	@	1.75
Scrap Sisal for Shredding	1.80	@	2.10
Wool Tares, Heavy..	1.40	@	1.50
New Burlap Cuttings	2.25	@	2.40
Aust. Wool Pouches.	2.00	@	2.25
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging..	.90	@	1.00
No. 2 Bagging.....	.45	@	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1....	.06¾	@	.07
New Light Flannelettes	.05	@	—
Silesias No. 1.....	.04	@	.04¼
New Black Silesias..	.03½	@	.03¾
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.02½	@	.03
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls.....	.04¼	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.02½	@	.03
O. D. Khaki.....	.03	@	.03¾
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¾
B. V. D. Cuttings...	.06¾	@	.07

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.90	@	1.10
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.25
New Silesias.....	3.75	@	4.00

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phil.)

Shirt Cuttings—			
New White, No. 1.	.06½	@	.07
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04½	@	.05
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales...	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	1.10
Domestic No. 1...	—	@	1.05
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.75

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.65	@	1.75
Domestic	1.50	@	1.75
Manila Rope.....	—	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.75
No. 2.....	.95	@	1.00
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.45	@	.50
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 2 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White.	1.75	@	1.80
No. 2 Soft White.	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy.	.60	@	.75
Manila Cuttings....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila...	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.22½	@	.27½
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	1.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.70
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.65	@	.75
Mixed Papers.....	.15	@	.17½
Print Manila.....	.45	@	.55
Container Manilas..	.27½	@	—
Old Newspapers....	.30	@	.37½
Paper Wool Strings..	.60	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated boxes....	.30	@	.35
Kraft corrugated boxes	.60	@	.65
Screening Wrappers.	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	2.65

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White $35.50		@	—
No. 1 Tints 36.50		@	—
No. 2 White 25.50		@	—
No. 2 Tints 26.50		@	—
No. 2 Golden Rod.. 27.50		@	—
No. 3 White 21.00		@	—
No. 4 White 15.00		@	—
No. 4 Tints 16.00		@	—
No. 4 Golden Rod... 17.00		@	—
Direct mill shipment in three-ton lots			
No. 5 White $10.50		@	—
No. 5 Tints 11.50		@	—
No. 5 Golden Rod.. 12.00		@	—
No. 6 White 9.00		@	—
No. 6 Tints 9.50		@	—
No. 6 Golden Rod.. 11.00		@	—
No. 7 White 8.00		@	—
No. 7 Tints 8.50		@	—
No. 7 Golden Rod.. 10.00		@	—
Book—			
No. 1 M. F. $7.00		@	—
No. 2 M. F. 6.50		@	—
No. 3 M. F. 5.35		@	—
No. 1 S. C. 7.25		@	—
No. 2 S. C. 6.75		@	—
No. 3 S. C. 5.85		@	—

Coated Book & Litho

Ton Lots (resale)

No. 1 .....$12.00		@	—
No. 2 ..... 10.25		@	—
No. 3 ..... 8.90		@	—
Coated tinted 13.00		@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..)46.00		@	—
Sheets 54.00		@	—

Pulp

Ground wood.....$29.00		@	—
Unbleached sulphite. 44.00		@	—
Bleached sulphite... 54.00		@	—
Kraft 50.00		@	—
Soda 54.00		@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f.o.b. Toronto)

No. 1 White Shirt Cuttings	.06¼	@	.06½
Light Prints.....	.02¾	@	.02¾